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ABSTRACT

The Major Project in the Field of Education in Latin America and the Caribbean resulted from a consensus of the countries of the region concerning the necessity for a renewed, intensive, and sustained effort to meet unsatisfied basic educational needs between now and the year 2000. The five articles in this bulletin explore innovative alternatives that meet the requirements of a balanced educational development. "New Strategies for Education and Training Financing in the Third World" (S. Lourie) raises questions concerning understanding of the socioeconomic factors underlying the success or failure of various educational strategies. "The Teaching of Mathematics at Basic and Secondary Levels in Chile" (G. Galvez; I. Villarroel) discusses the history of mathematics instruction in Chile since 1967, describes the current situation, and makes recommendations for improvements. Charts and graphs are included. "Conclusions Surrounding the Quality of Education" (P. Lafourcade) proposes an evaluative process to help educational improvement. "Texts in Student Achievement and in Teaching Methodology: Primary Textbook Project in Jamaica" (N. A. George) is a study of the impact and effectiveness of the Primary Textbooks Project in Jamaica. "Teaching Aid Materials for the Teaching Staff Training in Bilingual Intercultural Education" (M. Amadio) discusses the content of materials used by teachers of indigenous peoples. Lists of activities and publications of the Regional Office for Education in Latin America and the Caribbean are appended. (JB)

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bulletin

THE MAJOR PROJECT IN THE FIELD OF EDUCATION
In The Latin American and Caribbean Region

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The Major Project
in the Field of Education in Latin America and the Caribbean
has resulted from a consensus
on the part of government representatives
of the countries of the region
concerning the necessity
for a renewed, intensive and sustained effort
to make good deficiencies and to meet
unsatisfied basic educational needs
between now and the year 2000
as a prerequisite for the development
of the those countries
in line with objectives shared by all
and by means of actions in which
each country's own effort
may be benefited
by horizontal, subregional, regional
and international co-operation.

THE MAJOR PROJECT IN THE FIELD OF EDUCATION

In Latin America and the Caribbean

SUMMARY

Presentation 5

New strategies for Education and Training Financing in the Third World.
Sylvain Lourie. 7

The Teaching of Mathematics at Basic and Secondary levels in Chile.
Grecia Gálvez - Irene Villarroel. 16

Conclusions Surrounding the Quality of Education.
Pedro Lafourcade. 59

Texts in student achievement in teaching methodology. Jamaica.
Nancy A. George. 79

Teaching aid materials for the teaching staff training in Bilingual Intercultural Education.
Massimo Amadio. 87

OREALC Activities 95

OREALC Publications 113

BULLETIN 15

Santiago, Chile, April 1988

In order that this bulletin
may reflect in as complete and timely manner as possible
the initiatives and activities carried out
by each and all the countries of the region
in relation to the Major Project in the Field of
Education in the Latin America and Caribbean Region,
pertinent official bodies are invited
to send to
the Unesco Regional Office for Education in
Latin America and the Caribbean
all information they wish
to have published in this bulletin.

The publication of this bulletin has been made possible by the voluntary contribution of the Spanish Government to the activities of the Major Project in the Field of Education in Latin America and the Caribbean.

The views expressed in the signed articles are those of their authors, and are not necessarily shared by UNESCO.
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PRESENTATION

The countries of the region face, every day with a greater urgency, the challenge of offering a good quality education in the context of severe financing restrictions. The answers to this problem are complex and demand a strong component of experimentation and adaptation to different and changeable national situations. However, in spite of the difficulties, it is already possible to notice the presence of an important set of experiences and valuable essays. This number of the Bulletin of the Major Project of Education constitutes - in that sense, an important contribution to the task of spreading results of works that contribute to elucidate the terms of quality and resources. The article of Sylvain Lourie, IIEP Director, presents the results of an international level research, with a proposal full of suggestions which encourage the regional discussion. Such text is accompanied by a set of four works which face the education quality problem from different perspectives. Grecia Galvez and Irene Villarroel focus the subject starting from the mathematics teaching. Nancy A. George does it from the study text role in the school performance. Pedro Lafourcade shows a proposal where the evaluation is a component of the educational quality improvement process and finally, Massimo Amadio analyzes the subject related to educational training in bilingual intercultural education from an experience of preparing texts. Each one of these articles is the answer to different purposes and situations. However, as a whole, they constitute a valuable material that brings out the intensity with which is worked in the search of innovative alternatives that satisfy the requirements of a balanced educational development.

NEW STRATEGIES FOR EDUCATIONAL AND TRAINING FINANCING IN THE THIRD WORLD

Sylvain Lourie (*)

The discussions about the future of education in the third world (**) are frequently pronounced in connection with a reasoning that comprehends proof of a crisis in the labor market, an analysis of the effects of demographic pressure on the educational demand and an awareness of the financial pressure that reduces the means of response to this demand. On behalf of the governments, these considerations as a whole lead to the necessity to demonstrate a greater efficiency in the use of resources assigned to education through better management and the use of new information technologies.

Unfortunately, such a framework does not reflect the reality. It is too lineal and too "causative" and because of this, too candid. A previous adjustment of the principles seems necessary before examining the methods in order to increase the efficiency of several methods of education and training, which is the objective of this essay.

In the first place, let us open our minds beyond the school systems managed by the Government and let us revise the diverse present and future teaching and training methods. In order to understand the nature of the educational demand, which is without any doubt influenced by demographical factors and the necessities of the labor market, it is necessary by all means to consider the inexorable socio-cultural pressures that affect values and standards. These govern the content and the objectives of all the forms of education. The discussion goes beyond the formal structures of the educational systems and of the training programs managed by the Ministry of Education and occasionally, by the Ministry of Labor, in order to include established activities managed not only by the productive sectors and public and private services, but by non-governmental organizations as well.

Secondly, and following the above framework, let us clarify the components of the cost/efficiency relation. The concept of resources stands from financing provided by the central government (mainly by the Ministry of Education) through a broader field of actual financial resources provided both by the public sector as a whole and by the private sector. In this perspective, the measures relating to subsidies, transference and savings could become very different and probably stricter than those applied generally to the disbursements made by the Ministry of Education. In this way, the costs cannot be exclusively assimilated to the expenses of this Ministry.

In the same way, there is need for broadening the idea of efficiency and for applying a two fold criterion: to that of equity,of a sociocultural origin (access and participation of all the groups to their educational systems) must be added to that of performance (especially in terms of demography and employment), which in its turn must transcend the purely quantitative goals and go beyond the exclusive objective of the effective schooling of the/age group as an integrity. The performance's results must also be founded on an estimation of the contents of the teaching programs (curricula) and of the teaching methods so the "apprentices" can see in it a reflection of an arrangement which responds to their needs, interests, and problems and not only a centralizing order of the pedagogical State. This leads to a reinterpretation of the two elements of the cost/efficiency relation and of the maxima apparently unmistakable of reducing the cost and increasing the efficiency; it should rather tend to the reduction of the cost by means of the diversification of the financing sources and to keep a stricter account of the resources, while the efficiency cannot remain linked to purely quantitative notions, but be inscribed to an extent that not only has to do with the labor market but with the socio-cultural environment as well.

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* Sylvain Lourie: Director of the Bureau of Studies and programming of UNESCO, Paris.

** If the essential part of the examples in this article comes from experience in the "South" some reflections may be considered suitable to the other hemisphere and some of them even for France...

Thus, two principles arise: the resources will have different origins and will be used to their optimum, and equity and performance criteria must be respected. On the light of an amplified view there will be an intent in this framework, to remake or anticipate the suitable forms and structures of education.

Identification of the Target Groups and their Institutions

In order to identify the "consumers" or the "claimants" of education we will not circumscribe to those who only aspire to enter the traditional structures of the educational system. We will try to apply our two criteria, of equity and of efficiency from the point of view of the target groups which correspond to age groups, be they in or out of the school structures. We will try to find some clues that will lead us to eventual answers to their expectations.

Children (between 5 and 14 years of age)

Within the school system

The corresponding institutions or structures are the primary schools or their extension in the first cycle of middle education (9 years of schooling). The innovations that can bring about a reduction in cost must improve the internal efficiency and the relevance of the system. The efforts, concerning equality as well as efficiency consist in an extension of pre-primary schooling, specially for children under unfavorable conditions in rural and urban areas. The enlargement of the pre-school institutions, however, cannot but increase the costs since the arithmetic relationship of the number of students per teacher in pre-primary school must be low to be efficient, must be dispersely addressed to populated regions, needing a widespread coverage. Although, the learning agents which are not necessarily college trained teachers (volunteer mothers, social workers, etc...) may play useful roles by cutting down the expenses, they cannot substitute qualified professionals. Piaget's studies have shown the vital importance of socialization during the first age, and of an acknowledgement of early learning. An experience of this nature includes investments in carefully planned methods and contents, as well as close supervision of the volunteers by the teachers. At this stage, the quality of education is determining and no action should be undertaken bearing in mind a cut down of costs.

The "quota demand", has priority in terms of equality in primary schools. The target group has the fundamental right to receive a minimum number of school years. This vital minimum will be named "cultural flotation line", and no citizen should find himself or herself deprived from it. Every extention of the coverage and every access guarantee, with its qualitative consequences, obviously originates additional expenses, and the corresponding resources increase. As an example, it will be enough to recall that during the decade of the 70s expenditure per student in developed countries, expressed in constant prices, increased from 50% to 100%, precisely to ensure (1) better quality teaching (fewer students per teachers, better teacher training, free modern learning material, etc.).

In an aim to avoid an excessive unitary cost growth, there are several techniques: microrestructuring, readaptation of the pedagogical advances and so forth (2).

Naturally, a certain qualitative progress can be achieved, if education by the peers is applied or if individual programmed education is used, including techniques of "assigned time per task" which may respond to "specifications of terminal results" (task records which specify attitudes, behaviors and knowledge after a specific period of the learning process) rather than a global time imputation, standardly applicable to all children of the same class.

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(1) Husen, T. "The school in the achievement oriented society: crisis and reforms", in Phi Delta Kappan, fevrier 1985.

(2) There are numerous available procedures for improving the offered education as a whole, on the one hand, by increasing the access and the retention (for example with changes in the utilization of time using techniques like shift services, class'day alternation, automatic promotion or by adapting the rural shool calendar to the season's agrarian necessities or even by adjusting the school days work in the aim to contemplate usual demands about children's collaboration at home) or, on the other hand by working on the improvement of the contents'quality and of the learning process performance, at the school's individual level (for example making use of microstructural techniques like programmed education, changes in the way of reordening students in groups, and changes in the teaching style).

We ask ourselves whether these actions will lead to actual costs' reductions. Let us briefly analyze what these structural actions mean. Education by the peers cannot be carried on without careful supervision of the volunteers or of the educators trained to this effect. Programmed education requires a great investment in terms of time (an hour of teaching per one hundred hours of technical training). The assigned time technique per task needs a subtle and detailed analysis of the terminal performances' characteristics, so that each unity of time corresponds to a specific task that may be performed at different speeds, regarding each child's capacity. This demands experimentation as well as continuous control and revisions, especially in the case of disfavored elements of the population, be it for social or economical reasons.

None of these techniques is in itself cost reducing even if they pursue qualitative improvements. Apparently they should lead to teachers time savings and consequently to a reduction of the fixed expenses. However, it is very likely for the teachers to accept an increase of their working time without the corresponding payment, when facing modifications on the intensity or on the nature of their work.

In this respect, it should be pointed out that in most developing countries, the currency raise increase in the number of personnel has been accomplished at the expense of the teachers real income.(3)

This tendency is not likely to be held for very long as, day by day more teachers must look for a second and sometimes a third job so as to avoid a dramatic deterioration of their purchasing capacity. Furthermore, experience shows that qualitative achievements such as, deduction of the teacher/students ratio are considered by the teachers as irreversible victories. Undoubtedly, the teachers are not willing to accept an increase of this ratio escorted by the corresponding economies, whereas in the past a lower ratio has been achieved.

Finally, quality improvement requires an increase in the production of teaching material (books, learning material, audiovisual equipment), an adaptation of the evaluation system and a reorganization of the current training and of the teachers situation. All this represents, as defined a cost that necessarily has to be included in the fixed expenses, going beyond a realistic vision of the present trends. In 15 African countries south of the Sahara, the fixed expenditure corresponding to teaching material represented from 0.09% to 3.59% of the primary education's fixed budgetary expenses.(4)

A conclusion which we cannot be overlooked is that conventional primary schools will not have a significant -not even conventional- reduction of expenditures. Nevertheless, this does not mean that a modernized organization of the teaching schedules and of the learning methods will not allow for notorious improvements, both in terms of access and coverage and of relevance of the school programs.

Outside the school system

Children in compulsory school age who cannot comply with this requirement because of the system's incomplete coverage should represent a target group even more important than the preceding one and be the beneficiaries of unconventional, non-institutional type programs.

Notwithstanding, even though out of school education of a non- conventional type (low cost rural teaching, assisted instruction by television, etc.) may seem to offer an alternative, experience indicates that these are short lived options due to parental and community resistance. When Central Government expenditure possibilities have reached their limits, the local communities, parents and the non governmental structures (for instance, religious organizations) try to assume the responsibility of part of the burden.(5)

Nevertheless, as it often happens, (such as in Panama (6), the Phillipine (7), Kenya (8) once institutions and programs for primary school level have been locally favored by the communities or by the parents, these end by requesting the government to take over. In the case of educational television (like in the Ivory

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(3) Eicher, JC. "L'evolution des systemes d'enseignement dans le monde de 1960 a nos jours: aspects economiques et financiers". UNESCO (Division des Politiques et de la Planification de l'Education), Paris 1985.

(4) UNESCO, Annuairi statistique, Paris, 1984

(5) Commonwealth Secretariat, Rapport sur le Financement des Ecoles par les Collectivites ("Community financing of schools"): Commonwealth regional workshop with special reference to Southern Africa, held in Gaborone, Botswana, juin 1985.

(6) Isos, Ramón, "Productions in Panama", in Prospects, Paris, Vol II Nº 3, 1977, pp. 395-400.

(7) Orana PT. "Barrio high schools and community colleges in the Philippines", in Prospects, op cit.pp.401-412.

(8) Godfrey, Martin & Mutiso GCM. "Economics politics and education: Kenya's Harambes Institutes of Technology", in Institute of Development Studies Bulletin, Brighton, UK, Vol6, Nº 3, febrier 1975, pp. 85-94

Cost (9) and Nigeria (10) the hypothesis of presumptive or expected savings, which had motivated the innovation, proved to be negative. Even more distressing in the fact that this type of education, is finally adopted by the parents, skillfully stimulated, to say the least, by the teacher's unions. Similarly, the considerable effort undertaken in Haiti to introduce the "creole" as the vernacular language so as not to depart from reality, (11) has been rejected by the parents, in the same way as the projects of rural primary education were in the French speaking Western Africa during the decades of the 60s and 70s. (12)

In all the above cases, the existence of a primary education "of a second order" will be excluded. Between an innovative alternative that proclaims potential savings and the "true" primary school of "conventional" quality, neither the parents-worried about the confirmation of an idealized cultural identity for their children -nor the State- whose main concern is centered in consolidating one of the legitimate privileged instruments-seem inclined to accept the "non-conventional" alternative. Where the latter has been able to flourish, though restrictedly, it is considered a "superficial" solution for second class citizens.

What parents ask for and what the State prefers are the conventional schools assisted by teachers of the conventional type. In this way we return to the starting point and we should bear in mind the afore-mentioned unavoidable cost reduction when we mentioned children in the conventional school system. In this respect we question ourselves as to what to answer to the former and to the latter.

Institutional Echoes

In its entirety, the pre-school, primary and general education establishments are founded and managed by the State or are under its supervision and control. The mode will depend on the country's political-administrative structure: strongly decentralized or of mixed nature, of federal, federated or local level. Generally, the alluded actors are officials that belong to the Central Ministry of Education, to each State's Ministry and to the municipal or local organisms in charge of education.

Nevertheless, the appearance of action by the local community in numerous developing countries, as well as private initiatives by the parents and or its representatives acting individually or as a group is increasingly observed.

Thus, private forms of primary education begin to appear (13) when these exist a clear disposition by the government not to directly commit itself in the management of the schools or simply by an incapacity of the Central Government to respond to a demand of which it is conscious but for which it does not have enough means.

Certainly, a great number of non-governmental associations and organizations handle programs of a non-conventional type. But setting aside the complex case of the traditional and religious schools. (14) the current trend in the developing countries is that of preserving non-state designed forms, and when the State is qualified, to request a progressive incorporation of such programs or establishments to be under normative supervision or under operative control by the government. This concerns historic movement which originated in the society in question and, consequently, the wish that the State should preserve its authority for reasons of cultural identity and national legitimacy is still latent in them.

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(9) Baby Nicolas, "Cote d'Ivoire: la television abandonee. "Le Monde de l'Education, Paris, Nº 83, mai 1982 et Benveniste, Anne "Cote d'Ivoire: Television extra scolaire pour l'education des adultes ruraux: bilan critique": Tiers Monde, Paris, Vol 20, Nº 79, juillet septembre 1979, pp. 465 578

(10) Silverman, Theresa, "Tele Niger: Adapting in Electronic Medium to a Rural African Context". Information Bulletin Number Eight. The Clearinghouse on Development Communication, Washington, DC, 1976.

(11) Salom, Bernard, Education and Development: The case of Haiti. Paris, DECD, 1984 (Development Center Papers). 5. Commomwealth Secretariat, Rapport sur le Financement des Ecoles par les Collectivites ("Community financing of schools"): Commomwealth regional workshop with special reference to Southern Africa, held in Gaborone, Botswana, juin 1985.

(12) "A rural alternative to primary schools in Upper Volta". In "Development Digest", US Government Printing Office, Washington DC, Vol XIX Nº 1, janvier 1981, pp. 25-37, extrait de; Ahmed, M & Coombs, p. Education for Rural Development: Case Studies for Planners, New York, Praeger Publishers, 1975, Chap.9, pp. 335-363.

(13) For a broader discussion about educational reforms in Chile, consult Jara, Alejandro & Contador, Hector. "The Neo Liberal educational reform: Changes in the supply of educational services (1979 1982), PIIE, Santiago de Chile, Agosto 1983.

(14) For a study about koranic education consult "Les formes traditionnelles d'education et la diversificacion du champ educatif: le cas des ecoles coraniques", Paris, IIPE 1987 (report of a seminar IIPE). Also consult Eickelman, Dale, F: "Traditional forms of education within a diversified educational field: the case of coranic schools" IIPE, Monthly seminar on strategic planning, Paris, december 1984.

Adolescents and Adults

The grouping of these two age categories (from 12 to 18 and more) falls within the hipothesis formulated by the author with respect to future institutional changes. Let's be clear: for the first group, that is to say, the adolescents current trends (15) outline the generalized efforts by the governments to respect the simultaneous demand of the equality and performance criteria. This will be difficult without designing new measures for the mobilization of resources so as to ensure the respect of the fundamental right to education that we have named "flotation line".

When passing on to the adult population group, a great number of actors appear in the scene. Focusing our attention in this phenomenon, we give up considering the age groups in their relationship to their institutional and traditional bonds (children/primary school; young people/secondary schools and universities; adults/retraining or universities) and we consider the potential demand of this second group as a demand that should be met outside the school system.

Within the School System

Two types of relatively different demands originate from this group. The first, comes from youngsters above the compulsory school age, who specially wish to benefit from, the higher cycle of the secondary school in order to obtain the neccesary qualifications with a view to continuing post-secondary studies and who can not be considered as candidates for a professional training program.

The second, refers to students that have already begun their post secondary studies not related with the productive sectors and who wish to continue with a junior college education in order to obtain the qualifications so as to enter the university where they plan to follow general studies (exact and natural sciences, social science, law, literature, etc.). Their learning space will be located, above all, in academic ambits.

For this group, the education system will be founded in the introduction of new technologies, mainly in communication fields (open or distance universities), in a general introduction to the computerized learning systems an extension of the information communication centers and in closer contact with specialized training or post secondary research institutions. The professionalization of the teaching staff and its specific pedagogical training (beyond the technical knowledge) represent a new dimension which evidently will demand additional means.

In effect, if some research contracts focused on productive activities, reciprocal education among students, researchers and professionals, and certain collective extramural operations (for example with local communities) may cut down costs, quality training for this group, necessarily will increase expenses in education, and allocation of a greater percentage of the fixed expenditure to non-related areas and an important financing investment in computerized and data equipment will have to be made. The only possibility of reductions is that of granting less scholarships to students, particularly in Africa.

The second type of demands is represented by those who wish to continue a post-primary education by means of terminal studies aimed to acquiring a trade or technique, or through university programmes related to the productive and research sectors (for example, business administration, agricultural engineering, computer or communication sciences, applied science, etc.) These shall differ from the first group in that once the general education "floating line level" is obtained, they will continue in the education system pursueing a secondary pre- professional or technical education and a post-secondary specialized education.

This group level should have training and learning facilities available related to production, and which in turn will rely increasingly in institutions and structurally different organizations from those of the first group, which do not require close identification with the productive sector.

Considering the rapid changes in the production and research processes and structures, the context does not continue being that of a classroom associated to intramural workshops or laboratory exercises. The distance between knowledge and know how for the "producers" and the "consumers" must be as reduced as possible.

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(15) Special emphasis is placed in the regional meetings of Ministers of Education organized by UNESCO. For example consult "The Mexican Declaration", final report of the Conference of Ministers of Education and those Responsible of Economic Planning in the Member State of Latin America and the Caribbean, held in Mexico from the 4th to the 13th of december, 1979, UNESCO, ED/MD/58, Paris, March 1980, and "Education et Developpement Endogene en Afrique", Rapport de la Conference des Ministeres de l'Education et des Ministres charges de la Planification Economique dans les Etats membres d'Afrique, Harare, 28 juin, 3 juillet 1982, Unesco, ED 82/MINEDAF3, Paris mai 1982.

Moreover, this distance reduction brings forth suitable cost reductions. In this way, when the main part of the fundamental training, essentially theoretical, can be carried on in the classroom's framework, most professional and preprofessional training is performed within the same working or production environment. Nowadays, industry in the United States allocates for training or recycling of their professional or management staff, nearly as much as the existing conventional post secondary institutions (16).

Thanks to subcontracting mechanisms with the industry, or to tax exemption conditions favorable to the industry, new-out-of-school structures and organizations actually complete what the academic institutions offer.

Outside the school system

In developing countries this group is formed mostly by those who have dropped out of school or have never been enrolled. In the recently industrialized countries, this could also correspond to the out-of-school professional training, be it offered in programs aimed at those enrolled in conventional type programmes or at those who participate in out-of-school education projects. In this group, reference to employment perspectives could not be disregarded. For those who find themselves in the productive sectors of the labor market, training can be offered in family type enterprises, through a current traditional education, with considerably inferior means to those of programs which the large companies benefit from, specially multinational enterprises and establishments for especialized professional training. For the majority of the unemployed young people and adults it could be said that the limited training programs offered by unemployment programs, point above all to the acquisition of techniques which are scarcely connected with "signs" and real indicators of the labor market.

The "adults" category is made up of many sub-groups: the illiterates, who seek the "flotation line"; those who have already received an education or previous training but need to acquire new technical knowledge or need adapting the old ones and finally, adults who fulfill duties in cultural or social institutions. We can imagine different answers for each of them.

Institutional Echoes

Within the school system various structures may be appreciated. Although we may consider that those of the central government play a significant role this does not absolutely reflect a "monopoly" situation. Some systems which do not necessarily benefit from direct government financing provide a massive response at a relatively low price to the growing demand for more education. Such is the case of post-secondary or retraining education and of the distance education systems. The latter may be mainly addressed to teachers who look for a promotion (as it occurs in Costa Rica), but also to various customers (as it occurs in Colombia, Thailand and Pakistan), considerably transforming the preceding models, since they zealously defend their "autonomy". (17)

Furthermore, a growing number of establishments and private programs (secular or religious) attract students. Finally, some loan systems for students or bank financing systems stimulate private financing and the joint action in post secondary establishments and in the higher cycle of secondary education, as it occurs in certain countries.

For those who receive technical and vocational education and training, the key establishments are of a professional nature. Although some of the public actors that stimulate these establishments come from the Ministry of Education, others guarantee programs managed by the ministries of Labor, Finance, Agriculture, Industry, etc.

But the role played by the private productive or semi-public sectors that subsidize, manage or finance indirectly numerous educational and training activities granting, in some cases, scholarships to students, future employees of their establishments is more spectacular. It is not rare to find tripartite agreements (for example, establishments of technical education under the Ministry, establishments of post-secondary vocational training and of the private sector (18) which ensure the training pertinence in relation to the productive market's needs. In other cases, general expenses are covered by the productive sector which provides qualified staff and equipment, laboratories or specialized workshops, etc., aimed at training. As a counterpart, the productive sector has access to the elaboration of study programs and to selection procedures.

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(16) Dunn, Samuel, L. "The changing university: survival in the information society", in "The futurist", aout 1983.

(17) For a general discussion of distance teaching projects in developing countries, consult young, M. Perraton, H. Jenkins, J. & Dodds, T: "Distance teaching for the third world", London, Routledge & Kegan, Paul, 1980. Also consult Rumble, GWSW: A case study in distance learning system: Costa Rica (state University) and Kaye, AR, "A case study in distance learning System: The Allama Iqbal Open University in Pakistan", The Open University, 1978.

(18) Report of the foned evaluation mission PNUD/OIT about the cos/72/002 project, not published document of the National Institute of Learning (NIA) Costa Rica, August 1974, Page.34

With respect to out-of-school target groups and to the illiterates in particular, several programs try to meet an answer to the needs in literacy matters but apart from some major campaings (Cuba, (19) Nicaragua, (20) Ethiopia, (21)) when managed by the government these programs tend to be marginal. In this case, the ministries of education have limited control over these activities. If the Ministry sets the rules it is not however forced to assume full responsibility over the fixed expenditure of the entire literacy campaigns. The central government can nominally coordinate or control non-governmental private organizations, but it often allows a free hand in the management of some individual programs with their respective mechanisms. Moreover, there are numerous non-governmental organizations which manage non-formal education programs,(22) aimed at population groups whose schooling has been only partial.

The vocational training programs elaborated and developed within the framework of the commercial and industrial sectors are directly conducted in the company's premises or else, thanks to their contribution, in autonomous vocational training organizations (as in Brazil, Colombia, Costa Rica). (23)

The organizations for adults related to sociocultural activities, are rarely managed by the government. The courses related to local cultural activities or to those of unions consumption or production cooperatives as well as to young people associations are conceived managed and financed by the associations themselves, frequently thanks to State subsidies.

Finally, adults who aspire to supplementary training or education in order to respond to personal motivations, will act as any consumer in a market economy, seeking, comparing and selecting the program or establishment which best responds to his or her needs. This does not mean that some governments do not propose courses directed to adults, yet it is not frequent for these to be free of cost for the user. It is likely that this category, as in the case of the Soviet Union (24) is considered as an eminently "saleable" service.

In terms of cost, the repercussions of this rich diversity are evident. New actors will alleviate the governmental treasuries, sharing their traditional burdens: Local and industrial authorities, the banking systems and private associations are becoming in fact the main sources of non-conventional higher secondary education.

New Forms. New Strategies

The three vectors of financing

Three vectors seem to converge so as to transform the field of education. The first continues to be the government which must sustain the strongest impact by defending the equality criteria and for that very reason, responding to the present and future demands concerning the "flotation line" level. To this end, some of its own resources should be dedicated to children of the compulsory school age group, to the illiterates and to those who have dropped out of school. It is unlikely that changes related to a better quality should lead to some savings as a reduced investment will meet the teaching staff's organized opposition. The true ethical requirement of an openness of education for all demands an improvement of its quality. Here, quantity and quality are inseparable. Summarizing, probably there is no commitment between the minimum requirements which parents long for their children and what the State owes to them as a fundamental right. The heaviest part of this burden will continue to rest on the governments.

The second vector is constituted by the productive sector. The State will not be able to continue controlling the game in terms of operations and management of training and vocational education. It will continue performing a certain normative role, with the aim of ensuring that the training provided at the different levels of the vocational structure scale will not hinder the "flotation line" criterion. However, the fact is that, the structure, the actors and the programs shall adapt to the labor market's foreseeable demand at the productive sector's consideration. Although, it is true that the productive sectors in the past were not even interested in the definition of medium or long-term training needs and were not able to foresee them, the new communication techniques and data handling demand a basis of knowledge and training common to all, which no longer identifies itself with the traditional definition of the economic sectors. In this way, the training programs that will become a common denominator of the evolutionary programs (directed towards the future) will be in demand in these sectors, which in turn shall be progressively merged into an information/communication activity common to all. The State, through tax exemption or through indirect financing, can influence this perspective becoming the counterpart in the creation of such programs delegating to the production level these issues concerning their implementation.

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(19) Bhola, HS, Compaining for literacy, Paris, UNESCO, 1984, pp. 91-105

(20) "Nicaragua succeeds in the literacy campaign". DEI: Ministry of Education, San Jose, Costa Rica, 1981.

(21) Sjostorm, Margareta & Rolf, "How do you spell development?", a study of literacy campaing in Ethiopia, Upsala, Scandinavian Institute of Africa Studies, 1983.

(22) A study, under elaboration directed by the IIPE which has not yet been published seems to indicate that with exception of the mass literacy campaign, non-conventional education does not have much importance in quantitative terms and it seems to have diminished as the economic recess agravates. The analysis seems to show tipically, that the participant of the ENC in developing countries is masculine, poor, non schooled, urbane and young. This contrasts with the customary stereotype of the ENC programs that should be mainly directed to rural illiterate people, specially to females but also to males of any age.

(23) Corvalán, V. Oscar. Vocational training of Latin America: a comparative perspective. Vancouver, The International Council for Adult Education, 1977.

(24) Vladislavlev, AP "Lifelong education: concepts of development":, IIEP, Monthly Seminar on Strategic Planning. Paris, avril 1983.

The third vector, wich will be forced to grow in the coming years, is made up by non-governmental private groups and associations with no institutional connection with the productive sector. They will be more in keeping with reality, directly linked with the needs expressed by their clientele and probably will excel those profit bound structures or those great scale governmental ones in developing flexible and relevant training programs. They will become the necessary counterpart, not only in respect to the government but also to the productive sectors, which will see in these organizations a way to develop activities in which they are not directly interested but whose importance cannot be overlooked (unions, cooperative societies, consumer's associations, etc).

Non-resolved Problems

As a great number of structures and actors shall come to be associated with education and training, each one trying to satisfy a great quantity of demands, the problem of the authentication or of the certification of all types of educatión and training achievements acquires much importance. The examination, certification and recognition of the results be it by modular "systems" or by the "specification of final achievements", are questions which remain to be seen. The solution cannot demand progressive "re-schooling" of the diverse educational forms designed by the Ministry of Education, which cannot certify nor validate but those which strictly fit its own education criteria (25)

At a national level, the associations of "apprentices", the professional organizations and the productive forces may join the official authorities so as to establish systems of recognition and certification.

In the first place, there is the question of whether the new certification techniques and the new criteria will be perceived as open processes constantly adaptable and always negotiable, or whether we shall be witnesses of an academic and scholastic over-certification which leads to the propagation of the chronic diploma disease.

In the second place, we emphasize the State's future role concerning education issues.

A synergy may intervene between the three apparently independet forces. On the one hand, the central governments face serious problems concerning resources when it comes to the financing of training and of supplementary or new educational activities. On the second hand, the appearance of these new financial agents in the field of education up to now (reserved to the States's officials) who assume the burden of education and of training including from the head of the family to the entrepreneur or the union leader, brings in itself a new relation between "consumer" and "producer" of the educational action.

In the third place, the new information technologies, which do not necessarily reduce the cost, will deeply modify the lineal conception of schooling. In the course of his life, each individual will want to learn at its own pace, acquiring "modules" (Which have to be certified or negotiated) which will combine the experiences drawn from work and training. Thanks to these technologies (informatics, telematics) the "apprentice" shall no longer on the "teacher" in order to acquire knowledge, but will need more than ever a "tutor" in order to learn how to produce his knowledge.

These three forces (resources required from the central government, demand of direct participation and technological outburst), lead to reconsider the State's role, with which the question arises as to which will be its role if it has to preserve its national legitimacy and identity, acknowledging at the same time the variety of demands, and the diversity of answers which will cover and define the new field of education and of training. It is also pertinent to ask oneself if its role will consist of defining norms founded on public service criteria so as to meet the equality objectives, or rather it shall consist on controlling the processes of participation and the importations of new technologies, with which its role shall be prevailing and it shall therefore consolidate its monopoly.

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(25) Much has already been done in the United States by means of the CUE (Units of Continuing Education), established by the "Council of Continuing Education", exclusively refering to the training programs in the very heart of the industry. The "Cooperative Assessment of Experimental Learning" follows a paralell path in the United States.

A reasonable way

In our search after new educational strategies, we cannot but be impressed by our relative ignorance of the profound significance and of the contents of the unquestionable educational demand.

We ask ourselves why is there such a big gap between the experienced and expressed necessities and the institutional answers offered, and whether the school (its programs, its structure and its methods) offers useful answers to the huge social questioning of values. Likewise, we ask ourselves if we can say that the majority of the non-conventional programs of education work better in this respect and are necessarily more pertinent and cheaper than education at school; whether the patterns concerning company spirit, management or independence may be regarded as outstanding by the majority of the educational and training programs.

As a whole, the answers to such questionings are not very clear. In the past, the tendency was to establish a too lineal causative relation between education and the traditional definitions equality, according insufficient attention to its relevance; or between education and the measured performance, approximately, in terms of acquisition of competence but with little interest on the overqualification, on underemployment or on the lack of self-realization.

Seemingly, from now on we should direct our curiosity towards the subjacent phenomenon or individual and collective values and behaviors, closely linked to any learning process. The analyses of the sociocultural tendencies based on a better understanding of the available data and on a new impulse to the studies, surveys and investigation concerning the producers and consumers of education and training would provide the economists, administrators and educators with an instrument which the specialists in communication media and industries utilize with excellent results since several past decades. (26)

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(26) Specially consult the reports of COFREMCA (Paris) and of RISC (Friburgo).

THE TEACHING OF MATHEMATICS AT BASIC AND SECONDARY LEVELS IN CHILE

Grecia Gálvez P. - Irene Villarroel V. (*)

Within the framework of V.2 Program of Unesco "The teaching of science and technology", the OREALC has been promoting the improvement and modernization of science and technology teaching, particularly enhancing the introduction of contents related with new fields, taking into account the requirements of the national development of Latin American and Caribbean countries.

Likewise, innovations and improvements in the teaching contents, methods and materials of scientific disciplines, including mathematics, as well as the development of training programs and projects for teachers have been benefited. It is also worth noting that the development of the Major Project in Education in Latin America and the Carribbean Region, regarding the improvement of the quality of education given to marginal and lower income sectors, has deserved and will continue deserving special attention from the countries and UNESCO.

On the other hand, the fast scientific and technological development has increased remarkably the importance that the teaching of mathematics has had during the last lustrum at all levels of the educational system.

The present study on the teaching of mathematics at basic and secondary levels in a country of the region, prepared by Grecia Gálvez and Irene Villarroel, forms part of the activities sponsored by OREALC/Unesco within the abovementioned field.

We feel pleased to point out that this document, before being published, was presented and analyzed in a work session in the presence of a selected group of 12 specialists, who agreed that it will contribute enormously to the improvement of the teaching of mathematics, both in the country where the study was carried out, as well as in many other countries of the region.

The OREALC will continue supporting similar actions, and will also make the necessary efforts to begin new projects in the short term at a regional level in order to improve the teaching of mathematics.

Some general statements on the teaching of mathematics

The fantastic scientific and technological development has lead the world, particularly from the 50's, to a qualitatively new situation, which the physicist and science philosopher J.D. Bernal called "scientific-technical revolution". As from the introduction of this new concept 25 years ago, the influence of science and technology on the most diverse spheres of social life has widely confirmed Bernal's characterization.

There is almost no important aspect in society which has not been affected by deep changes, originated by this scientific-technical revolution. An adequate understanding of the main consequences of the scientific-technical revolution, as well as the capacity to assimilate its achievements and be able to apply them creatively, and even, to contribute in producing new knowledge and technologies in the most advanced zones of the development is becoming an increasingly important -but not sufficient- condition for countries like Chile, in order to overcome underdevelopment.

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Within this framework, the importance of teaching mathematics at all levels of the school system is increasing. There are new requirements regarding the quality, stability and applicability of the knowledge the student must assimilate since his first steps at school. These requirements are a consequence of fundamental, protagonic role that Mathematics are playing in the scientific-technical revolution.

The assimilation of an organized system of mathematical knowledge and skills, is today, more than ever, a basic element for the harmonious development of the child's and the adolescent's personality. This, for several reasons. First, because Mathematics constitutes one of the main achievements of human intelect. It is a medular aspect of the contemporary culture. Second, because Mathematics is an unavoidable instrument for the knowledge assimilation and skill development in a great variety of disciplines, starting with Natural Sciences. Third, because, Mathematics constitutes a language that has achieved and importance similar to the oral language.

As a language, it performs an each time more significant role in a great number and diversity of communication fields. It's enough to look at a newspaper or a publication, not even specialized, to come to the conclusion that a relatively high level of dominion of the mathematical language and its symbology is demanded from the reader. On the other hand, Mathematics as a language, is also a basis for thought development itself. There is no doubt, that in the cognitive development of a child, the acquisition of the number constitutes an achievement that trascends outstandingly the ambit of Mathematics, and enables him to reach new levels in its reasoning capacity.

In order to answer the new requirements, schools have to give, from the first day, a scientifically supported and systematically structured mathematical teaching. The central part is formed by the comprehension and application of the essential mathematical concepts, the assimilation of solid knowledges about mathematical facts, statements, theories and procedures, and the development of forms of thinking and of typical works of the discipline.

The subject of mathematics offers the possibility of showing to the student, how the mathematical language and its symbology permit a formulation of ideas in a condensed way, unmistakable,easy of visualizing, with international character, and how the mathematical language reduces greatly the work of thinking and opens new possibilities to reach higher levels in the cognitive activity.

Solving problems, if it is properly oriented, constitutes a methodological procedure that offers multiple possibilities for the development of creative thinking. Formulation definitions and working with them, making demonstrations and mathematical inferences must not only be "steps in the development of the substance", but must become powerful tools for the strengthening of the logical thinking. Basically, mathematical thinking is not different from the forms of thinking in other scientific and practical fields. Nor it is specially more complex or difficult. It is only distinguished by a higher degree of logical accuracy and by a greater emphasis in the use of special symbology.

At the same time, knowledges and skills acquired in the mathematical learning have potentialities that go beyond the limits of the subject, and constitute the basis for the assimilation and comprehension of knowledge in other disciplines. In turn, the rest of the subjects offer several opportunities to apply creatively mathematical knowledges and ways of thinking so as to strenghthen and deepen this knowledge.

It is important to emphasize that in order to learn, the student, must become actively and responsibly involved in the learning process. To achieve this, a number of conditions must exist, which play an each time more important role while the student grows and develops a more critical and questionable attitude. Among them we have to mention the following:

- The student must have reasons to perform the learning activities that are presented before him. Many of these reasons depend on the degree of relation that such activities have with the satisfaction of specific needs. If they represent for the student an answer to his needs of security, love, belonging, curiosity, eagerness of researching, etc., there will be a greater probability that he takes an active part in them, and in this way a learning of greater quality will be reached. Many times, and unsuitable methodological approach in the teaching of Mathematic, creates in the student the feeling that what he has to learn in this subject, has little or nothing to do with vital situations which are direct or indirectly afffecting him, be at the present or in the future. This decreases the interest for Mathematics and impairs the quality of learning that has been reached.
- It is important that the student believes that he can learn, that he ascribes himself certain positive characteristics related with the acceptance of the others,that he feels at ease with himself. In other words, it is important the student's self-concept and his self-respect. Forming the self-concept and self-respect conceptions is a long process that depends on his relationship with other children and young people of the same

age, as well as with adults. When planning the teaching process it is important to take these factors into account. Frequently, the difficulties that the student finds in the Mathematics subject, the feeling of failure he experiments again and again facing problems and excercises, or in evaluation activies,make him form a deteriorated image of himself, and he relates the subject with a feeling of displeasure and insatisfaction. Sometimes, the situation becomes worse due to a negative attitude taken by the teacher and his parents in front of the student.

- The student must feel a stimulating, warm, friendly atmosphere in the classroom. He must feel comfortable, at ease, secure in the group where he is performing learning activities. This will permit to him a better integration and a more active participation, allowing him to take advantage of the classroom experiences.
- In order to assure an effective learning, it is necessary that the student makes good use and lives the experiences that permit the development of the activities of the subject. The student has to assume a main protagonic role in his own learning process. He has to carry out the activities that have been proposed, with creativity, if possible. In order that this occurs, it is absolutely necessary that he has an active and positive attitude towards the subject and towards the learning activities.
- Among the important conditions for the learning process we must also consider study habits and techiques. Therefore the teaching of Mathematics must include a systematic and planned training of these conditions. The student must acquire them as part of the learning process of the subject, mainly because Mathematics has its own forms of studying. A significant percentage of failures in this subject can be attributed to the use of techniques of study that are not agree with the characteristics of the discipline.
- The teaching-learning process is basically a relationship between people who express feelings and emotions. These affective-type relationships are always present and affect the quality of the interaction. It is well known that the quality of emotional relations within the classroom plays a fundamental role in the development and in the results of the learning process. It constitutes a condition for the learning and a source of valuable educational experiences.

The task of the Mathematics teacher is not limited to the teaching of his subject. His duty, finally, consists in contributing through it to the complete education of the student. Therefore, he must worry about the cognitive, affective, ethic and social aspects, among others. Obviously, the curriculum of the school, includes a number of other training activities which contribute with experiences that try to give a complete education: sports, class-meetings, extraprogramatic and extrascholar activities of different kind, etc. But it is worth noting that most part of the learning experiences are given in the subjects of the study plan, which cover about 80% or more of the entire school activity of the student.

In this way, the development of the mathematic programs must be focused on achieving educational objectives beyond the limits of the subject, considering the student as a complete person. The teaching strategies, the conditions under which the learning is performed, the styles used by the teacher, etc. are going to permit to shape personalities, behaviours and features that go beyond the purely cognitive aspects.

It is important to notice, however, that the inherent characteristics of every subject, allow to focus on the development of specific educational objectives. In the case of Mathematics, we can mention the following:

- It stimulates the tendency to clarify ideas and appreciate their exact meaning, since in the Mathematical work, terms must be defined univocally to be used in their exact meaning.
- It develops a logical and reflective style of thinking, since the mathematic processes have that structure and must be learnt accordingly.
- It stimulates the conscious use of methods in the solution of problems, since in Mathematics the work is done based on stages and steps that follow a specific order, based in a plan.
- It stimulates a critical and objective attitude towards reality, since in Mathematics there is no place for prejudgements nor hasty conclusions with no sound basis, and each proposal must have a suitable basis.
- It stimulates memory development by means of comprehension, since it makes evident the infertility of storing facts and informations without meaning in the memory.
- It gives elements of judgement and information in order to get to know the quantitative aspects of the world that surrounds us.
- It stimulates the development of creativity since looking for solutions or ways of solutions requires imagination, intuition and inventiveness.

- It contributes to the shaping of values, attitudes and important habits such as: tenacity, order, severity, accuracy, perseverance.
- It contributes to the development of the self-critical and the self-evaluation sense, since in the study of Mathematics it is frequently necessary to review critically what has been done, to test possible solution procedures and check our own points of view.
- It helps the student to become aware of his way of thinking and of the contents he thinks about, which is obtained when the student knows what are the methods to face the different situations that arise in Mathematics.
- It stimulates the "internal control" as it offers the student a lot of opportunities to understand the relation that exists between the results he is able to reach and the effort he does to reach them, since in Mathematics there are few occasions to attribute a result to chance or to other external factors.

The importance for the student of the continuous and increasing advance in his mathematic development, as well as the proper features of the discipline, confers the subject a special relevance regarding the methodological-didactical aspects of education. In the last few decades, there has been an explosive increase in international investigations in connection with the teaching of mathematics, and really significant advances in this field have been achieved. At the same time, these studies have contributed to make evident a great number of problems not yet solved, and aspects of the present strategies of teaching that are still to be improved.

The investigation, the search of new approaches and working forms, the development of teaching creativity and an innovative attitude should characterize the development of the subject in the school. It goes hand in hand with an active exchange of experiences at national and international levels.

Study Plans of the Formal Educational System

The 1967 Curricular Reform as an antecedent to the present curriculum.

In 1967 the national educational system experienced an important reform. Obligatory basic education was extended from 6 to 8 years, while secondary education was reduced from 6 to 4 years.

Study plans and programs were also substantially modified. In order to implement this reform a new branch of the Ministry of Education was created: The Pedagogical Training Experimentation and Research Center (Centro de Perfeccionamiento, Experimentación e Investigaciones Pedagógicas) whose main offices were located in Santiago, Chile. The department of Mathematics of this Center was the one in charge to start the curricular reform of this subject.

At the basic level, there were programatic and methodological changes. Concerning the programatic aspect, in the first basic cycle (1st to 4th year) "integrated units" were developed, which included mathematical notions. Using the set language, traditional contents were introduced: numbers, operations, fractions, decimals, measures and geometry, trying to relate them with other areas of the human activity. For example, in the program of the 2nd grade it was proposed "to infer the necessary mathematical notions for the improvement of direct or indirect communication media"; it was also suggested:"to inquire and compare prices of tickets, telephone service and postage stamps" (Magazine of Education Nº 12, 1969).

In the second basic cycle, (5th to 8th grade) the program was organized by areas, establishing the area of Mathematics and Natural Sciences. Although the initial purpose was to establish some paralels between the objectives of both subjects, each one of them was independently programmed. In Mathematics, the approach of traditional topics was modified, focusing them from a structural perspective. In the last two years, the sets of natural, rational and whole numbers were presented as arithmetical systems formalizing their respective properties. It was stated that "Preference must be given to abstract and general notions and results which can be used as a structural framework of all the mathematical construction (...)." The ideas of set and structure are playing a unifying role, and are being incorporated in the Mathematic programs from the most basic levels (...). They represent the infrastructure on which we may lay nowadays the notion of number and numerical operations, as well as the configurations of points and figures in the space (...). Mathematics has, in the basic teaching, the right and the duty not only of developing routinary computer skills, but also thinking about the inherent conceptual meaning of this operation.

In the methodological aspect, in 1967 the Cuisinaire-Gateño, or the coloured reglets method, was introduced, which had been previously tried on a small scale. A great quantity of reglets were distributed and training courses were given for the teachers. The Cuisinaire method, however, was firmly criticized and was soon abandoned.

The idea that children should work with concrete material in order to learn Mathematics, continued prevailing and in the 70's, the

Zoltan Dienes' ideas prevailed, in an attempt for structuring a methodology based on the discovery, on individual and small group learning rythms and supported by the hierarchical organization of objectives proposed by Gagné.

At the secondary level, the programm existing before the reform, consisted in the classic algebra and the elementary Euclidian geometry. The modern Mathematics were absent at the Secondary Education, and the new program tried to fill this gap. The modifications introduced in the contents tended to confer "a unitary, logical and careful structure" to the program. Besides, the formative value of the programs was pointed out, emphasizing the care of the language, the clarity of the ideas and the logical procedure of demonstrations. In brief, the purpose was to put secondary level students in contact with the modern Mathematics, logically organized and well established. (Michelow, 1969).

The program for the 1st. year of Secondary Education, consisted in three units: the real numbers, algebra and geometry. It was recommended that "the point is the gradual introduction of the deductive method, through brief sequences, correctly selected, in any of the three units". The unit on real numbers included "the construction of new entities called irrational numbers", a process that "constitutes a set of brief inferences". The program showed concepts and steps in detail, since it was important that these ideas are perfectly clear for the student. The unit of algebra suggested a development where the traditional elements (monomial, multinomial, equations) were presented within an algebraical structure. It was not only intended to strengthen the study of the concept of structure and justify operations with algebraical expressions, but, most of all, the idea was to develop "an algebra as it exists today with its wide and powerful methods, which result from the universal validity of their structural characteristics." The unit of geometry included the topic of punctual transformations, linking it to structure concepts. Emphasis was given to structure not only as a way to bring the discipline up to date, but also due to a better learning of structured knowledge proved by pedagogical researches.

The 2nd grade of Secondary Education, included three units: compound numbers, as terminal and final universe of arithmetics; algebra in real numbers, including operations with powers, roots and logarithms and the solution of equations and inequations of second degree, and finally, vectorial geometry of the related plane.

In the 3rd and 4th grades of Secondary Education the plans of study were separated into "scientific" and "humanistic". The program of the scientific area, in 3rd grade included: algebra foundations, giving the basis of the set concept through elemental notions of symbolic logics and strict definitions of relation and function notions; plane linear transformations, justifying the matrix operations; metric plane vectorial geometry and trigonometry. In 4th grade elements of analysis were introduced, in order to complete the view of pure Mathematics and begin with topological structures. The major lines of applied Mathematics were through the units of probabilities and statiscstics, and computer notions. For the humanistic area, mathematical contents were much less ambitious. The program of 3rd grade was focused on formal aspects (mathematic language), on cultural aspects (history of Mathematics) and practice (mathematic operations). The program ended in 4th grade with two topics of applied Mathematics: probabilities and statistics and computer notions.

Knowing that teachers were not prepared to implement this Reform, the authors concentrated their efforts in making manuals and giving training courses in Santiago and in the rest of the country. Nevertheless, the curricular change was so deep and the lack of didactic material for students was so acute that these measures were not enough to make the teachers absolutely familiar with the new contents.

The following years, the program of Mathematics for Secondary Education was gradually modified and reduced, eliminating the topics that seemed more difficult for the students or less familiar for the teachers. Some of the topics that initially were introduced in 2nd grade, were moved to 3rd or 4th grade and another one included in this last course, was erased from the programm.

Plans and Programs for the General Basic Education

The current plans and programs of the General Basic Education (G.B.E.) date from 1980 (Decree 4002). (Magazine of Education Nº 79, 1980).

The G.B.E. is divided into two cycles of 4 years. In both of them, the classes of Mathematics are of 45 minutes each, 5 times a week. Likewise, the program suggests that if it is not possible to fulfill all the schedule of the study plan, it is required at least to comply with the minimum schedule of "basic subjects", which includes Mathematics. More over, according to the regulations, in case there is a course or a student who presents problems in the basic subjects, it is possible to increase the number of hours of these courses, suspending the rest for a maximum period of one semester.

The programs must be used "as learning manuals, which must be adjusted to the realities of different schools". Their objectives must not necessarily be met in the course of the year. In fact, the programs from 1st to 4th grade are organized biannually, "to give the maximum flexibility to the teacher". As well, there is no minimum or maximum percentage of objectives to be met. The only compulsory requirement is to obtain the final minimum objectives of the G.B.E., which in the case of Mathematics consist in "controlling the four arithmetical operations and their essential complementary notions".

In the foreword to the program, Mathematics is presented as "an indispensable element for the total formation of the human being". The general objectives of its teaching are:

1. To contribute to develop in the student his logical reasoning which permits him to solve properly the problematical situations that are given to him.
2. To develop in the student the capability to rediscover and assimilate mathematical concepts and principles, which make him possible to solve, with great possibilities, the quantitative problems that are present in his every-day life.

The basic topics included in the program are: notions on sets; the decimal numbering system; the four basic operations; numerical system (natural, whole, rational, and decimal numbers); powers and proportions; measures; notions of geometry and statistics.

Sets. From 1st to 7th grades, programs begin with notions, language and symbols to be applied in other topics. As stated in the foreword: "... it is important to remember that the set theory must not constitute an isolated unit, but must be shown in each course as an immediate application of mathematical concepts or as a support. The set language must be understood as such, in its applications.

Decimal Number System. This topic appears from 1st to 6th grades. The program proposes a continual expansion of the ambit of natural numbers , reaching the 999 in 2nd grade; the 999.999 in 4th grade; 9,999,999 in 5th grade; and 99,999,999 in 6th grade. A similar graduation is proposed for the introduction of decimal numbers: reaching 0.01 in 4th grade and 0.001 in 5th grade, and for the roman characters: knowing until C in 5th grade and until M in 6th grade. The specific objectives of this area have been grouped under the titles: know and use the number system and know the properties of numbers.

The four basic operations. According to the Decree 4002, they constitute the only minimum objective directly related with the subject of Mathematics. Therefore, we will describe in detail some of the objectives proposed for its learning specifying the corresponding course.

The concepts

Adittion. "To form the union set of two separated sets" (1st and 2nd grades).

Substraction: "To recognize the substraction as opposite operation to addition" (1st and 2nd grades).

Multiplication: "To introduce the multiplication as a set that is associated to groups of equivalents" (3rd and 4th grades).

Division: "To introduce the concept of division related with the set concepts... to emphasize the relation between division and multiplication" (3rd and 4th grades).

The practice

Addition and Substraction:

- in oral and in writing with or without brackets (1st and 2nd grades)
- with or without reserve (3rd and 4th grades)
- in the known ambit (5th and 6th grades)
- combined, in oral and in writing (1st to 4th grades)

Multiplication:

- till 9,999 (3rd and 4th grades)
- with factors of two or more figures and a product less or equal to 999.999 (5th grade)
- with numbers of two or more figures in the second factor and a product less or equal to 99,999,999 (6th grade)
- by means of abbreviated methods (6th grade)
- with numbers of three or more figures in the second factor (7th grade)

Division:

- till 9,999, exact and inexact (3rd and 4th grades)
- where the factor is expressed by one or two figures (5th grade)
- where the factor is expressed by one or more figures (6th grade)

Exercises with combined operations:

- Excluding division (3rd and 4th grades)
- To solve and propose (5th and 6th grades)

The problems

Addition and substraction, separately:

- to propose and to solve in writing (1st to 4th grades)
- to represent in a diagram (1st and 2nd grades)
- to create 3rd and 4th grades)
- in the known ambit (5th grade)

Multiplication and division, separately:

- to propose and to solve (3rd to 6th grades)

Number systems: natural, whole, rational and decimal numbers.

During the first four years of the B.G.E., the student basically works with the set of natural numbers. Rational and decimal numbers appear during the block corresponding to 3rd and 4th grades. In 7th grade natural and rational numbers are systematized and the whole numbers are introduced.

Powers and Proportion

The powers are introduced in 5th grade, as a multiplication of equal factors. Then they reappear in 8th grade, in the calculation of powers with whole basis and natural exponents.

The concept of proportions is included in the 8th grade program, where direct and inverse proportion are defined, and applied in solving problems. It is suggested to apply proportions in calculating percentages, which had just been studied in 6th grade in the context of "fractional expressions".

Geometry

The program includes the acquisition of geometry notions of plane and space, The first approach is through the space (1st to 4th grades). Then the theme is centered in the plane (5th to 7th grades), and finally it comes back to space (8th grade).

The emphasis on terminology is expressed in the objective: "To understand and use correctly the geometrical vocabulary related with plane and space figures" (7th and 8th grades). It is also insisted upon the "application of the set language of geometrical study" (7th and 8th grades).

Measurement

This topic is deeply related with the teaching of geometry. The dimensions that are measured are: length, area, volume and angles. Besides, it is mentioned the measurement of weight (3rd and 4th grades) and of the capacity (3rd, 4th and 8th grades). Measures should imply a mastery of decimal number applications, and they should be expressed in different units in order to exercise their equivalence (3rd and 6th grade). The program mentions exercises measuring sides of polygons to calculate perimeters and areas (5th and 8th grades). In the last three grades, it is also proposed to include this calculus in solving problems. Calculus of volume of cubes and rectangular prisms and solution of problems (8th grade). Application of angles measurements in geometrical figures of the plane (7th and 8th grades).

Statistics Notions

The program proposes topics such as: calculus of the arithmetic mean (6th and 7th grades) and mode (7th grade) and its determination and interpretation (8th grade); graphic representation of data (7th and 8th grade): reading and interpretation of statistical diagrams and preparing frequency tables (8th grade).

Plans and Programs for the Scientific-Humanistic Secondary Education

Study plans and programms for the Mathematic area in the present "Humanistic-Scientific Secondary Education", are stipulated in Decree Nº300 dated December 1981, and in its amendments, dated January 1984 (Magazine of Education Nº 94, 1985).

With respect to the plan, it is establihed that the course of Mathematics in 1st and 2nd grades, will have a total number of 5 classes every week, each class of 45 minutes. In accordance with the amendment, one of these periods must be assigned to "guided study". This may correspond to: "seminary works, laboratories, library works and other similar activities, with the purpose of generating study habits deepening or complementing some aspects of the program".

The plan of study for 3rd and 4th grades, includes a "common plan", with a total of three hours a week, each one of 45 minutes. In addition, the student may choose an "elective plan" of three weekly hours, which offers him three programs of different subjects, one of which is "Mathematic Applications".

It is important to mention that the elective programs depend on the possibilities of the school and the regulations established by it. Other subjects can also be given on the approval by the Ministry of Education.

The curricular conception guiding in general the programms is that they must be "centered in the person". It is stated that "The student is the center of all pedagogical activity and therefore every action must favour a harmonious and overall development of the student". This idea was translated in the Mathematic programm, in that "under no circumstances, it pretends to form a professional of mathematics. The aim is that all, or at least the majority of the students can have access to this basic science, offering them the essential elements contributing to their development as individuals and future members of the society, and helping them, as well, to understand the world they are living in, so that they can play an active part in it."

On the other hand, it is emphasized that the Mathematical program must try to conciliate theoric as practical aspects of the subject. Therefore, it is necessary to "find an adequate equilibrium so that the student can on one hand, achieve a more logical thinking, helping him to analyse problems and to understand the establishment of concepts, and on the other hand, reach the enough skill in operations required in the daily practical problems". In the foreword, it is also mentioned that the program objectives are "minimum for one school year" and also are flexible: "the teacher shall feel free to reorganize the program in the sequence he considers more suitable according to the specific reality of each school and especially, of each course".

The general objectives presented in the program for all the Secondary Education, that is from 1st to 4th grades, are expressed in the following terms:

"In the Secondary Education, the subject of Mathematics is intended to create the conditions so the student can:

1. to develop his investigating and creative spirit, that stimulates his intellectual curiosity and give him technics for a permanent self-instruction,

2. to secure and complete the acquisition of the basic mathematical concepts that are considered important in the education of any instructed citizen, favouring his future integration to the labour life and the continuity in advanced education,

3. to have a clear idea on what means the Mathematic science and its social function, to know some of its applications, so to enrich and extend his mathematical knowledge, and to study its relationship with other aspects of the culture,

4. to develop positive attitudes and values that come from the mathematical work.

The content of the programm is structured from 1st to 4th grade, with two units for every year. One unit is related with aspects of the numerical and algebraic ambit and operations in general. It includes:

- Introduction to algebra in R (1st grade, unit I)
- Equation and inequality system of 1st degree (2nd grade, unit I)
- Roots and equations of 2nd degree (3rd grade, unit I)
- Logarithm and equation systems (4th grade, unit I)
- Elements of descriptive statistics and proportions (4th grade, unit II)

Every year, except the 4th one, includes also a unit concerning geometrical aspects:

- Congruences and geometrical constructions (1st grade, unit II)
- Circumference and geometrical constructions (2nd grade, unit II)
- Proportions and similarity (3rd grade, unit II)

Specific contents are shown in Appendix Nº1.

The elective program of Mathematics of this Curriculum is flexible in the sense that the teacher can choose, from the proposed contents, those which are more in accordance with the school environment, and with the interests, needs and curiosity of the students. The teacher is also responsible for the methodological strategies he will follow.

The contents proposed in the program are: matrixes and determinants; analytical plane geometry; plane trigonometry; computer elements; intuitive notions of a derivative of a function; combinatorial elements and geometrical applications.

Specific contents for each one of these topics are shown in the Appendix Nº1.

Methodological Aspects of the Teaching of Mathematics

Official Methodological Outlines

The Centro de Perfeccionamiento Experimentación e Investigaciones Pedagógicas (CPEIP) (The Pedagogical Training, Experimentation and Research Center) of the Ministry of Education has been publishing, over the last 20 years, printed matter which gives methodological orientation and the official contents of the different subjects that form the curriculum of the existing basic and Secondary system.

Among the late titles of this organism in the area of mathematics, we can mention the articles published in the Revista de Educación (Education Magazine) (Appendix Nº 3), in the Series "Experimental and Mathematics Sciences" (see Jarufe T., 1983) and the Series "Science of Education".

The latter one includes the article "Mathematical Education" which specifies the fundamental objectives of the discipline, and some methodological recommendations that

- 23

must be taken into account in order to achieve them (Jarufe T. y otros, 1983).

Next, we show some aspects of such methodological recommendations that are referred to the two basic levels, which are conferred a strictly formative character. Later on, the teaching of Mathematics" will become more formal" and "there will be an awareness of the scientific process that leads to the discovery of mathematic notions, as well of the importance of mathematics per se and as the basis of technological advance."

With regard to the process of learning, it insists on carrying out "moto-sensorial, perceptive, logical, numerical and spatial" activities so that the student becomes aware of and coordinates his "logical mathematical ideas" and developes his "mental structuctures". These activities should be in relation with the local reality and the experiences of the child, and consider the analysis of different materials.

"Dogmatic teaching" is rejected, emphasizing that "at this level definitions or defining explanations do not lead to understanding and for this reason children must form their concepts, definitions, etc. by means of personal experiences".

Other aspect that is pointed out is the need of devoting the maximum of time to the first stages of education. "The time used in building sound basis of the mathematical construction will never be wasted time."

The building of a determined mathematic language with its corresponding symbology, "should be gradually assimilated by the child, but not imposed on him". Later on, the necessary exercises must be done, which will confer the student "the mastery of calculus". The article continues stating that "it is important to offer teaching-learning situations (...) always tending to contribute to the formation of the intellect of the students without ignoring the achievement of a basic operation skill".

After these general recommendations, other ones are given, concerning specific contents. Let us see some of them.

Fundamental recommendations in relation to set language

This part insists, just as the programm, on the fact that set notions "must not constitute an isolated unit in each course. This language must be learnt as such, through application or support of mathematical concepts".

Fundamental recommendations regarding numbers and numbering

In first place, it is recommended to give emphasis to the reading and writing of natural numbers and strengthening in this stage the comprehension towards the positional values of the figures. Then, the student must establish equivalences and write down numbers in developed notations. Children should also be able to compare pairs of natural numbers applying the relations "less than", and "greater than", or "equal to". The objectives related to the numbering system must constitute the basis to really "understand the addition and substraction with reserve in the numerical ambit considered".

As for the development of decimal fractions, it is suggested to carry them out in relation to the decimal system so as to favour their exemplification. It should be understood that whole numbers are introduced in the Program as a means to solve the problem of substraction. They must be treated with the numerical straight line. Specifically, the recommendations express: "the numerical straight line must be the support for the treatment of the whole number set and the operations of addition and multiplication". The work with rational numbers, as far as it is concerned, should be carried out through common and decimal fractions. They are introduced in the program as a means to solve the problem of division.

It is proposed to relate the treatement of the set of factors of a number with the criterium of divisibility. The students must not memorize rules, but understand the reasons.

It is also recommended, to secure the concept of multiple and divisor of natural numbers. To that end, it is suggested to prepare lists of multiples of at least the first ten natural numbers.

The notion of direct proportionality must be achieved by the students by means of carrying out experimental activities and through a process of logical reasoning using the mathematic notions already known. And it is added: "Once this notion is well established students will be able to solve problems easily about percentage, "rule of three", interest and discount". Finally, it is pointed out that the scale notion can be related to proportions, preparing tables when be necessary.

Essential recommendations concerning operations, properties and problem's solution

These recommendations start emphasizing that the teacher must work with natural numbers so that the situation that he shows permit him to deduce properties as the following: the addition of two natural numbers is always a natural number, the product of two natural numbers is always a natural number, the difference between two natural numbers is not always a natural number, the quotient of two natural numbers is not always a natural number. He should also "secure and explain the commutative and associative properties of the addition and multiplication of natural numbers; the distributiveness of the multiplication with respect to addition and substraction; the neutral element of addition and the multiplication".

The exercise of mental calculus, is considered very important. As it is explained, "it is not consist in using an ordinary operative technique without writing it but, in applying the properties of operations and numbers in order to find a personal fast and sure method. The child must be left in freedom to choose the method that has been used and justify it correctly." It is added later: "Abbreviated procedures in multiplication constitute a good possibility to practice the mental calculus, insisting, on the special case of multiplication by a power of ten".

Finally, it is recommended that operations with decimals are made together with those of common fractions. As for the multiplications of whole numbers, they should be treated before negative fractions.

Basic recommmendations regarding geometry and measures

In this case it is considered fundamental the work with concrete material. The geometry must be fundamentally intuitive "based on the use of concrete and simple elements that permit the study of forms and measures of the figures of plane and space. The basic concepts must be achieved through the patterns and its corresponding graphic expressions". The management of these concepts by the student must be considered as a basic requirement to present the concepts of elemental geometry. For example, "the cube or regular hexahedron not only must be observed and described; instead, the concrete action, the work of handling (decomposition, construction, reproduction with different materials, like a strong model with plasticine, like superficial model with paper or like model of edges with wire) leads to shape the concept".

Fundamental recommendations regarding graphics and descriptive statistics elements

It is given much importance to reading and using graphics, since they are used as instruments to communicate specific information. Moreover, as it is indicated, they constitute a way to explore in detail situations of the reality, and at the same time, they permit a better view of a specific information. In this sense, it is necessary that the student knows several types of representations so that he may choose the more suitable in each case.

In relation to the contents of statistics two difficulties detected in students are shown: they have problems in selecting a scale for a linear or bar graphic and they can't distinguish well in what way indicators of a central tendency help to describe or characterize a set of data. The solution to this problem is the practice, which will help to develop the ability to determine the most suitable scales and the indicators of a central tendency that must be used in each situation".

Teaching methods used in the classroom. Contributions of ethnographical investigation

During the last ten years, a new approach towards Latinamerican educational research has been developed, known as "ethnographical approach" since it is originated from anthropology. It suggests to observe the social interaction in "natural" situations, to pay attention to undocumented phenomena to mantain under analysis the complexity of social processes and elucidate the specific cultural knowledge of the social group that is being observed. Assuming that the daily school events have a certain "internal logic" where you can enter, investigators are interested in the net of inter-relations that form the processes of teaching-learning. (Rockwell, 1980,a).

In Chile, Lopez et al. (1984), studying the reasons of school failure, rebuilt the intimacy of some basic schools. As an example, we will refer to the work on the notion of set. In a first year, during a "review", the teacher said: "we can have sets of.."; the students answer: "sheeps", "cows". Then, she asks them to do a set with all their utensils that they have in their school bags and tie them with a thread of wool. In order to check the work, she approaches every student and asks him to mention the objects he or she had tied. In the middle of the review she tells: "now I'm going to say if it is right or wrong". She helps a child that had not tied the thread of wool. Then, she says: "Now all of you know how to do this". Later on, in an evaluation, she writes down exercises on relationships between elements of two sets and she explains in detail what they have to do: "Now, each element of this set (flowers), has a corresponding element of the other (vase) and we are going to join them". It is very probable that the idea of putting a flower in a vase is not very familiar to the children; however, as the previous works, the task is simple and can be done by anyone capable of understanding the order, independently of his or her mathematic knowledges.

In another first grade, the teacher draws a circle on the blackboard and tells: "yesterday we started to see something very interesting that I enclosed in this...". The children complete: "set", "closed curve". The teacher draws several cups and asks again: "What is this?".

They answer: "litle cups". She goes on, guiding them:

Q: That I enclosed with ....A: A curve.
Q: How was the curve?...........A: Closed.
Q: It is a set of ....A: Cups

She repeats a similar dialogue with other drawings.

This teacher explains the use of activities with questions and answers telling: "I make the children think".

In a last group of first grade, the teacher calls the attention of a student that has not followed her instructions, telling him: "In this Universe set of things belonging to the sea, you are going to draw four subsets of ships, seagulls, anchors and fishes. But this child is drawing trees!". The students interchange opinions about how difficult it is to draw anchors and many of them try to change the work, drawing fruits or asking for permission to draw flowers. The teacher insists that they have to respect the order. It is frequently observed that the teacher gives specific instructions in a context that has sense for her, but that is beyond the children's understanding.

De Tezanos (1986), who observed Colombian classrooms, describes another dialogue about sets, also in a first degree of basic education, where the same absence of shared meaning between teacher and students is shown:

T: If we know that one apple is an element. Then, what is a set?
Ss: (all together) Lots of apples
T: What is an apple?
Ss: A set
T: (Tone of desperation) We almost had the definition and you already forgot it. What did you do with apples? What are these apples? (she gesticulates with her mouth).
S: Big
T: Oh! Jesus, look boy .... What is a set?
Ss: An element
S: A set is a group.

The teacher appeals to Lia (probably the best student) and makes her repeat: "A set is a group of elements".

Later on, the teacher tries once more:

T: What is a set?
S: Many apples.
T: (She cries) No ... Let me see, Lia. Lia repeats the definition that she had told before.
T: If I say that all the students in this class are a set, who are the elements?.
Ss: (all together) The apples.

De Tezanos concludes, that in the observed classrooms, "learning is transformed in a guessing process conditioned by time, where the student, to prove that he or she has learnt, must say the right word in the right moment". He infers that the teacher keeps an external relation with the knowledge that he or she teaches and therefore don't give it the necessary importance.

López et al. (1984), on their hand, described the teaching practice in the studied Chilean schools as a ritualistic activity, focused on the imperative of following a program and not in delivering knowledge. They affirm, "One of the central axes of teaching is the mechanical repetition of sentences induced by the teacher, independently of the meaning they can have for the students". The student learns to find the answer that the teacher wants to listen through the "guess play", trying to finish his incomplete phrases. The learning is fomented by means of the repetition of exercises; the question is to follow the instructions: "This is right, because she did everything I ordered", said a teacher talking about the work of one of her students. The superiority of the teacher is also made evident in the use of self-referring expressions such as: "Do the homework in the way you know I like it". Frequently, they appeal to the irony and to ridiculize the children in order to impose their points of view. The students show their works to the teacher who finally decides if the works are "wrong" or "right", stimulating a dependent and passive attitude in the children, who dare not taking the initiative since they are afraid of being wrong. The mistakes, must be avoided by all means, because they disturb the learning; therefore, the students have to wait that the teacher explains what they have to do before starting to work. Children almost do not ask any questions, but they do not decide anything by themselves. To a great extent, the questions that were observed had a formal character: "Shall we leave a blank line?"

Despite the abovementioned, the students learn to manage within school situations, looking for ways to evade intolerable rules (such as keeping silence in class) and too boring activities.

Many times teachers say that the parents are responsible of the children's learning "A child can not learn only what the teacher teaches in the classroom, his parents have to help in their homes". In a case, while the teacher complains that the parents do not teach their children in home, the parents complain that the teacher does not teach at school. After analyzing the situation of the observed schools, Lopez et al., stated that: "Many elements of the cultural and social aspects of the children and their families are repressed, discredited or ignored, favouring the cultural models of the medium class (that of the teacher or the school program). This separation makes, among other things, that the learning loses its sense, becoming an empty formalism".

Based on similar information to the one we have mentioned concerning the teaching of sets in first grade. Paradise (1979) notices:

"This content full of mistakes, its administration and the resulting partial comprehension from the student, can lead him to develop a lack of confidence in his capacity of reasoning and understanding. In this interaction we can see clearly how situations and paradoxical definitions can be used in order to assure authority and control. Curiosity is discouraged, in fact, the students do not put anything in doubt".

Textbooks and other supporting materials for the teaching of mathematics

The use of a textbook in the subject of Mathematics has always been an extremely polemical topic. Many teachers consider they are not necessary, while others think they are essential. Their opinions on the matter are very different compared with the position of teachers of other subjects.

In an investigation made with a sample of 72 schools of urban, semiurban, and semirural areas of different socioeconomic levels of the country, the teachers were asked if they used any textbook, classifying their answers in "always", "sometimes" or "never". The teachers of Mathematics were the least disposed to use textbooks. The differences with others subjects are strong and statistically significant. The highest percentages of teachers that never use textbook are in Mathematics (33,3%). In turn, the lowest percentages of teachers that always use textbooks are also in Mathematics (9,2%) (Sepúlveda M., Farrel J., 1983).

The teachers who answered "sometimes" or "never", were asked why didn't they use textbooks. 28,4% of the teachers of Mathematics answered that "textbooks are not the best didactic material", and 32,3% said that "textbooks are not necessary".

It is also significant the fact that 86% of the teachers of mathematics agreed with the statement "textbooks must be used mainly for exercises, once the subject has already been taught".

As part of the investigation, some of the inquired teachers was chosen in order to do a direct observation. They were observed during three periods of classes in their schools, noting if they used some textbook. This sample included 9 teachers of mathematics. Four of them told that they "always" used a textbook; other four "sometimes", and one of them said "never". None of the 9 teachers used a textbook during the observed periods of classes. According to the authors, this result would show that for a teacher of Mathematics the expression "sometimes" seems to mean "seldom".

The same research studied also the availability of textbooks for the students of the inquired teachers. The students were asked if "they had textbooks" if "they had to borrow them, or if "they didn't have textbooks". The total number of inquired students was of 946. In the subject of Mathematics the results were the followings: 21,8% of the students had a textbook, 2,3% had to borrow it, and 75,9% had not textbook at all.

These results differ from the positive attitude that students generally show with respect to the use of textbooks. In the subject of Mathematics 79,1% of them considered that "textbooks are very useful".

Sepúlveda and Farrel conclude, that "in general, students have a much more positive attitude regarding textbooks than teachers, and this perception of the student with respect to textbooks varies in a much smaller degree for the different subjects, than in the case of the teachers. The main problems concerning the use and availability of textbooks are related with: 1) the teachers' attitude and 2) the lack of economic means of the students to buy textbooks, even if the teacher wants to use them".

The Ministry of Education has freely distributed textbooks, principally in the areas of Mathematics and Spanish, for several decades, fundamentally in basic levels.

For example, the following table shows the number of Mathematic textbooks given to schools by the "Dirección de Locales y Equipamientos" (Schools and Materials Directorate) during the period 1980-1985.

Between the years 1980 and 1982, textbooks were only given until 6th. grade. During the next years, the number of textbooks distributed extended, until in 1985 it covered until the 2nd grade of Secondary Level. In the 3rd. and 4th grades of Secondary Level only History and Geography textbooks have been given. (La Educación Chilena - The Chilean Education, 1986).

GRADES	1980	1981	1982	1983	1984	1985
1st basic	235.000	275.000	333.000	282.000	290.000	170.000
2nd basic	203.200	255.000	293.000	280.000	295.000	155.000
3rd basic	201.000	235.000	280.000	275.000	290.000	195.000
4th basic	201.000	220.000	263.000	265.000	320.000	320.000
5th basic	233.000	220.000	256.000	256.000	320.000	320.000
6th basic	211.000	205.000	240.000	240.000	290.000	290.000
7th basic				226.000	226.000	226.000
8th basic					235.000	235.000
1st secondary						143.000
2nd secondary						142.000
3rd secondary						
4th secondary						

The number of texts distributed in relation with number of enrolled students, informed by the Superintendency of Education for those years, are shown as follows:

YEAR	AVAILABLE TEXTBOOKS	TOTAL ENROLLED STUDENTS	COVERED PERCENTAGE
1980	1.284.200	3.083.009	41.5
1981	1.410.000	3.043.231	46.3
1982	1.665.000	2.997.751	55.5
1983	1.824.000	3.039.309	60.0
1984	2.268.000	3.052.325	74.2
1985	2.196.000	2.963.410	74.1

The texts that are given correspond to those that have won a public bidding summoned for by the Ministry of Education. Several publishing houses participate in this bidding, with textbooks for the Basic General Education and the Secondary Education.

The texts are evaluated by representatives of the government, university teachers and other specialists that take into consideration aspects such as: content, external appearance, relation with curricula, cost, etc. Finally, the chosen textbooks are those with the maximum score in the evaluations, or in some cases, those with very similar evaluations and corresponding to different publishing houses.

The purchased are distributed among public, municipal and subsidized schools along the country. School, in turn, hand the textbooks to their students, usually, during the corresponding year of studies. The next, the books are given to the new students until they are too worn and have to be replaced.

The majority of the teachers use these texts only so that the students make the suggested exercises. The content of the subjects is developed by the teacher independently of the text.

On the other hand, it is frequent that the teacher of Mathematics complements the exercises of the textbook with working guides for his students, which are generally made by himself, or by the staff of teachers of Mathematics working at the school.

Figures corresponding to a preliminary survey that was carried out this year by us, reaffirm what we have just mentioned. As a matter of fact, a third of the inquired teachers, approximately, expressed that they used the text both for to treat the subject itself and to practice it. In the same way, the majority of the inquired teachers used working guides made by themselves.

Other materials used by some teachers in their classes of Mathematics are, for example: "Exercise notebooks" which are published by a publishing company of Santiago. These materials, just as their editors say "are conceived auxiliaries of the learning, as a help for the students and a complement for the work of the teacher". They appear weekly during the school period (March-November). Each topic is started with a conceptual synthesis that is clarified through examples developed step by step. Then, a list of exercises and problems and the right answers are given. These materials are prepared for Basic Education and the Secondary Education and the number of copies printed amount to approximately 5.000 copies each year.

It is also worth noting the use, especially by the students, of educational materials included in newspapers and magazines of national circulation whose main role is to promote the sale of those printed matters. Among this material, there are some of the Mathematical area.

Finally, we would like to note the special situation that occurs in some private paid schools, corresponding to communities such as German, English, French, and others. In these schools there are special plans and programs, approved by the Ministry of Education, and they work with textbooks and materials specially brought from abroad or with working guides based on them.

The Teacher of Mathematics

Training of teachers. Basic and Secondary levels.

Decree Nº 4002 of 1980, stipulates that in the first basic cycle "each course should be attended by only one teacher" assisted by specialists for the technical subjects, foreign languages and religion. In the case of the area of "numerical expression", Mathematics, the subject is given by professionals who have obtained the degree of "General Basic Education Teacher" or other similar degrees whose names vary according to the University or Professional Institute where they are conferred.

For 5th and 6th grades, in conformity with the above-mentioned decree, "school work will be programmed by related areas, with one teacher for all of them, or a different teacher per area". Only in "exceptional" cases, it is possible to have a different teacher for every subject.

In 7th and 8th grades, school work must be programmed by subjects, taught "by State Teachers or by General Basic Education Teachers with the corresponding speciality".

At the Secondary level, teachers in charge of the courses of Mathematics from 1th to 4th grades, must have been granted the degree of "Teacher of Mathematics" or, "Bachelor of Arts with a major in Mathematics".

The promulgation of the university law (DFLNº1 of 1980), permitted the creation of new universities, conferring them, at the same time, the exclusive right to grant academic degrees of Bachelor of Arts, Master and Doctor, in addition to professional degrees of the following careers: law, architecture, biochemistry, odontology, agricultural engineering, civil engineering, economy, forestry engineering, medicine, veterinary, psychology and pharmaceutical sciences.

In this way, pedagogical careers lost their university status, although they continued being taught in some universities.

DFL Nº 5 of 1981 on Professional Institutes and Technical Education Center, provided the institutes with the right to give any professional degrees, except the twelve careers mentioned above, which kept a strictly university status. Therefore, institutes can offer the careers, among others, of Pedagogy in its both General Basic and Secondary Levels. The institutional accreditation and the supervision of the careers offered by these new universities and professional institutes have been ruled by a series of regulations and procedures provided by the Division of Higher Education (División de Educación Superior) of the Ministry of Education, which have been modified with the time, according to the requirements resulting from the constant increase in the number of such institutions and in the professional area covered by them.

At present the different careers offered by universities and private professional institutes, are supervised for a certain period of time by a traditional university where their students must pass examinations.

Mathematic Teachers, of Basic and Secondary levels, are trained in universities as well as in professional institutes. Apendix Nº 3 shows the name of the career, the institution and campus where it is offered and its duration.

It's worth noting that the careers of "Pedagogy in Mathematics and Pedagogy in General Basic Education", are offered by the different institutions that train teachers with different durations. It is not easy to understand why an institution requires ten semesters, another eight or six, and even one requires only five semesters, to train teachers that will perform at the level of G.B.E. The only possible explanation is that different types of teachers are formed for similar functions.

On the other hand, there is still the idea that the teacher that works at the level of G.B.E. requires less training, thus being of inferior quality in relation with a teacher working at the Secondary Education level. The only entity where both careers have the same duration is the Universidad Católica de Chile.

As for the programs of training in one or another institution, there are some studies that show the existence of differences and not standarized criteria. For example, after meeting several times in order to analyze the Curricular situation in the different teacher-training institutions, the "Asociación Chilena de Currículum Educacional" (Chilean Association of Educational Curriculum) concluded as follows:

"There exist a great diversity of criteria concerning the selection of contents as well as the way they are exposed, their duration and organization, even in the case of the same career. (...) There seems to be a lack of technical criteria in the preparation of the subjects' plans and programs, which can be attributed to the fact that they are not always prepared by specialists in curricular discipline. This analysis shows there is still present a wide range of different approaches to conceptualize the nature, object, objectives, structure and application field of the curriculum". (Vera, 1985).

This is reaffirmed by some considerations, which arose after a comparative study that we carried out on the study plans of the Universidad Metropolitana de Ciencias de la Educación (Metropolitan University of Educational Sciences) and Instituto Profesional Blas Cañas (Professional Institute Blas Cañas) in relation with the career of "Pedagogy in Mathematics". In the first institution, for example, the subjects corresponding to the speciality are assigned 69% of the total training hours, while in the second one, they are only assigned 47%. The remaining percentage is devoted to pedagogical and instrumental subjects and educational practice.

At the Universidad Metropolitana, the professional practice is made in the 5th year of studies, with a total of 4 hours a week during a year. At the Instituto Blas Cañas, the practice starts in the 4th semester with an observation period and continues along the career with periods of "assistanship" and "execution", to finish in the 10th semester with the "professional educational practice".

In both entities, more or less the same subjects are given in the speciality: Algebra, Calculus, Geometry, Statistics, Computer Science, etc. In some cases, the only differences are the number of hours and their distribution in the careers.

As for pedagogic and instrumental areas, there are some subjects that are given in one academic institution and not in the other. For example, Universidad Metropolitana includes subjects such as: "Educational Administration", "Teacher's ethics" etc., that do not figure in the Instituto Blas Cañas. This latter, in turn, includes subjects of "Study Techniques", "Techniques of oral and written expression" and others that are not given in the mentioned University.

In brief, we can say that obviously there seems to be no homogeneous criteria that ensure a relatively similar education, both in quantity and in quality, among the wide range of institutions devoted to the training of teachers in general and particularly in Mathematics.

Educational advanced training in the area of Mathematics

The great majority of training courses for teachers are offered nowadays by private institutions. Many of them, ask for the sponsorship of the CPEIP, and must therefore submit their programs to the technical approval of this entity.

The institutions that ask to be recognized by the Ministry of Education,use to be rather unstable: ruled by market laws, they are constantly forming and dissolving, modifying their names and abbreviations, and transferring their teachers.

A list prepared in 1986, showed 138 institutions, including universities, professional centers and institutes, Municipal Corporations, ecclesiastical organizations, and all kind of companies.

Some of the institutions that have offered training courses to teachers of Mathematics, are as follows.

- Centro consultor del Folklore (Advisory Folklore Center)
- Education World Council
- Instituto de Asesorías Educativas (Educational Advisory Institute)
- Sociedad de Editoriales DIDASCALIA (Publishing Association DIDASCALIA)
- Chilean Red Cross
- Corporación de Seminarios Musicales de Frutillar (Music Seminaries Corporation of Frutillar)
- Sociedad Interdisciplinaria de Gestión Educacional Ltda.
- Olivetti S.A.
- Corporación de Desarrollo social de Buin (Social Development Corporation of Buin)
- CODELCO, Chile
- Centro Humanista de Crecimiento Personal, Viña del Mar (Humanistic Center of Personal Growth, Viña del Mar)
- ALBORADA, Residencia Universitaria (ALBORADA, University House)

The majority of the offered courses, correspond to 60 pedagogical hours and they must be paid, in general, by the teachers who want to be trained. After reviewing the courses submitted to the CPEIP's approval between 1984 and 1987 (until October), we found out that, of a total of 580 courses, 40 correspond to Mathematical topics, other 25 could be connected with this subject, because they deal with topics related with computer sciences although, in only two of them we found a direct relation with the teaching of the subject: "The computer in the Teaching of Mathematics" (1985) and "Teach Mathematics to your computer" (1984). The remaining 23 correspond to introductions to computer sciences, programming in several computer languages, and educational applications of the computer.

The distribution of these 40 Mathematic courses is the following:

- Mathematic teaching in general (mathematic teaching; teaching methodology; development of the mathematic thought).
  Pre school level : 5 courses
  Basic level : 8 courses
  Secondary level : 1 course
  Unspecified : 15 courses

- Geometry in basic level (Euclidean geometry) : 4 courses
- Learning impediments (in calculus): 3 courses
- Other Mathematic topics (fundaments, statistic, probabilities): 3 courses
- Mathematics methodology (applied to the agriculture): 1 course

These courses were offered by 25 institutions belonging to:

- Faculties of the Chilean and Catholic Universities: 4
- Institutes and Educational Centers. (some of them specialized in teacher training, and others just devoted to training tasks): 12
- Private school and organizations related to them: 5
- Municipals corporations: 3
- Labor associations (Teachers Association): 1

Of all these institutions, 20 function in the Metropolitan region, and the rest 5 in different provinces.

Concerning training activities directly performed by the Ministry of Education, this one is in charge of the Mathematic Department of CPEIP. In the last three years, this department has given about 20 courses along the country which lasted two, five or ten days; the majority of them are given during school vacations. The cost of these courses is normally lower than those given by private institutions.

The topics treated in the courses given since 1985 were:

For the General Basic Education:

1st and 2nd grade Mathematics	3 courses
5th to 8th grade Mathematics	1 course
Fundamental mathematic operations:	1 course
Problem solving	1 course
Methodology of the mathematic teaching	1 course

For the Secondary Education:

Combinatorial analysis	1 course
Geometry workshop	3 courses
Building of geometrical places	1 course
Calculating machine (elective plan)	1 course
Computer workshop	1 course
Unspecified	7 courses

There have also been working meetings or advisory plans for groups of teachers of the Basic and Secondary Educational levels, guided by specialists from the CPEIP. From 1985, 17 meetings of this kind have been performed, with a duration of one, two and five days, in different places of the country.

Another way of training that has been recently adopted in the Mathematic area is, courses at a distance. Every course is equivalent to 80 hours of training. The teachers are registered in their own educational schools, they receive the materials and they must devote a certain quantity of time during the week in order to work on them.

The courses for the basic level have been focused on the following topics:

Code 110 - How to start the Mathematic teaching

Code 111 - Basic aspects in the Mathematic teaching in the First Cycle of the General Basic Education.

Code 112 - First steps in geometry and measurement

The main purpose of these courses, according to a report of the Mathematic Department of the CPEIP, is "to show to the teachers that the Mathematic learning is only reached when the students understand what they are doing and why they are doing it. "The report insists on the fact that "in order to achieve this process in the acquisition of mathematic notions, it is necessary to emphasize the importance of the use and manipulation of specific materials" (Zavala, 1987).

As an example, we reproduce here the specific objectives of the first of these courses, "How to start the Mathematic teaching".

- "To develop the fundamental pre-numerical concepts in order to acquire the numerical notion and the basic ideas that permit the comprehension of the meaning of the digital numbers".
- "To understand that the notion of addition is developed through the union of set and the substraction by means of separating one set in two subsets. Moreover, the symbolic translation of such operations apppears after the students have reached a suitable level of abstraction of the operations that they perform with specific material".

Distance training courses, thought for teachers of Secondary Education are being focused on the teaching of Geometry:

Code 290 - An approach to Geometry at first grade of Secondary Education.

Code 291 - Geometrical places and proportions in Geometry.

The number of teachers enrolled in these courses during the years 1985 -87 are shown in the following table:

	Code	Year		
		1985	1986	1987
Basic level	110	1.678	547	---
	111	---	723	345
	112	---	---	545
Secondary level	290	---	1.025	195
	291	---	---	435
TOTAL		1.678	2.295	1.520

The analysis of the reach of this distance training program, shows that it was followed by an important number of teachers: 5493 in total, distributed in 3838 basic teachers and 1655 secondary teachers. These figures are specially significant since acccording to a census carried out by the Ministry of Education in 1985, there were 3683 Mathematic teachers working in the country in the secondary level.

It is also interesting to point out that in every one of the courses, the year after it begins, the number of interested teachers to follow it diminishes. Thus, we have that in the course (Code 110), from 1678 teachers enrolled during its first year, 1985, the figure decreased 547 in 1986. In the courses began in 1986 (Codes 111 and 290), the number of teachers diminished from 723 to 345 and from 1025 to 195, respectively. Considering the total amount of basic Level teachers enrolled in the program, we observed that the number decreased from 1678 in 1985 to 1270 in 1986 and 890 in 1987. In the same way, the total number of Secondary Education teachers enrolled decreased from 1025 in 1986 to 530 in 1987.

About the work conditions of the teacher

The work conditions of Mathematic teacher, just as the conditions of the rest of the teaching staff of the country, have experienced significant changes in the last few years.

As a product of the private education expansion and of the transfer process of the public schools to the municipalities, almost 100% of the teachers is working for the private sector. The teachers that previously worked in public schools, when they became dependent of municipalities, had to assimilate to the rest of the workers of the private sector, where, in fact, the specific educational function is ignored.

This implies, among other consequences, that today in Chile there isn't a solid Educational Career with a national scope. On the contrary, the legal regulations state that in the case of schools transferred to the municipalities, every one of the educational entities must establish "educational ranks and hiring and promotion systems" (Law 18.602, art. 12).

A particularly serious problem for the teachers' working status is the loss of the guarantee of the stability in the position. This is reflected in the fact that every year a high number of teachers are dismissed, either due to a reduction in the teaching staff or because the school or municipal authority does not agree with the professional performance of certain teachers. This situation is not always related with the academical qualifications or with the purely academic work of the dismissed teacher.

According to the teachers associations, besides the consequences already mentioned, the change of the laboral status of the teacher in the last time has meant:

a) a worsening in social security rights, hiring and transfer mechanisms, rules on holidays, licenses and number of daily work hours;
b) in most of the municipalities there have been noted a tendency to disminish salaries of teachers, especially in the case of new teachers;
c) there is a double burocratic control over the directors and teachers of schools transferred to Municipalities: that of the Ministry of Education and of the corresponding municipal organism;
d) given the characteristic of the process, the teachers and directors depend to a great extent on the personal decisions of the municipal authorities ("El Pizarrón" Magazine, 1986).

The current legal regulations, establish that the weekly ordinary number of hours of professionals performing teaching activities can not exceed 44 hours with the same employer. The work performed directly in the classroom can not no exceed 33 hours a week. The rest of the hours must be devoted to "cooperation's works, complementary activities and brakes", which include head-class tasks, co-programatic and cultural activities, extraschool activities, educational administration, etc. (Law 18602, arts. 3 and 5).

Teachers of the first basic cycle, generally, work in only one school. At most, they can have two shifts, performing one of them in one school and another in a second one. But a great number of teachers of speciality, of secondary or primary levels, complete their working hours in two or more establishment, with the aggravating circumstance that the total number of weekly hours, exceed the figure mentioned before. Therefore, the work becomes exhausting and less effective.

Another variable which affects the teacher's working conditions, is the number of students per course. This is rather variable and depends greatly on the kind of establishment. In private paid schools, in most of cases, courses are smaller than in other kind of schools, varying between 20 and 40. In municipal and state-aided schools, the number of students per course varies usually between 35 and 45. Unfortunately, we do not have more specific data about this important variable.

Finally, we would like to note that the working condition of the Mathematic teacher, although it presents the problems that have been described, is, in general, slightly better than the ones of teachers of other subjects. He can have more class hours and more working possibilities. For example, a considerable number of Mathematic teachers have studied computer matters and are working nowadays not only in the pedagogical area, but also in the computer field, which offers greater job possibilities and better salaries.

The achievement of learning objectives in the field of Mathematics.

School performance evaluation program

The main purpose of the "Programa de Evaluación del Rendimiento Escolar - PER" (School Performance Evaluation Program) which was implemented during the years 1982, 1983 and 1984, to evaluate the achievement of the educational objectives in the official programs in some levels of the G.B.E.. This evaluation covered, cognitive aspects through the subjects "clues of the thinking development" like Mathematics and Spanish and an area of "General Information" that includes the Natural Sciences and Social Sciences subjects. On the other hand it is also aimed to evaluate emotional aspects through the test of "Emotional Development" (Program...(a)).

In accordance with the available reports the PER covered about 90% of the students of 4th to 8th grades of basic education of the country. The following table shows the reached covering the years 1982, 1983, 1984.

For example, in 1982, the Mathematic test was given to 204.176 students of 4th basic grade and to 165.697 students of 8th basic grade. These figures correspond approximately to 85% of the school population in the mentioned levels, remaining excluded the students of the more rural areas of the country. (Himmel, 1986).

Year	Total of Evaluated Students	Total of Evaluated Courses	Total of Evaluated Establishments
1982	388.370	10.880	2.936
1983	392.063	11.425	3.218
1984	401.452	11.935	3.402

The tests were elaborated in the cases of Mathematics and Spanish in such a way to cover objectives of 4th and 8th basic grades, as well as objectives that correspond to previous levels that are essential for the achievement of the respective level.

The following table shows this structure.

Test of	Number of Questions by Level				Total Nº of questions
	2nd B	4th B	6th B	8th B	
4th basic	15	30			45
8th basic		10	10	40	60

The purpose of this "progressive structure" was to identify those objectives which, if not attained, didn't allow the achievement of the objectives of higher courses (Program...(b)).

All the items were of multiple choice, with three alternatives in the test of 4th year and four in the test of 8th year. The items were elaborated only for those objectives that were considered fundamental, in accordance with a survey carried out with a sample of classroom teachers.

In order to determine if the elaborated items were congruent with the objectives to be measured, the opinion of an specialist in the subject and in the evaluation area was required. Then, the items were experimented on a randomized sample of approximately 400 students. In this way it was possible to determine their facility and reliability. The average facility of the items was of 60% and their average reliability was of 0.50. (Program... (b)). Tables A.1 to A.4 of Appendix Nº 4 reproduce a sample of objectives of 2nd, 4th and 6th grades and their respective items.

In 1982 and 1984, the percentage of achievement of the objectives on a national level for the tests of 4th and 8th basic levels are shown in the following table.

These means reflect a level of efficiency between 50% and 53% in 4th basic year and between 44% and 47% in 8th basic year. The experts in the PER Program concluded that "if we considered desirable 80% of achievement of the minimum objectives included in the PER, we could note that the educational system is far for reaching optimum results". (Program...(a)).

Next, we will analyze more in detail these results and we will refer to some studies made in connection to this test.

In the previous tables we could appreciate that the achievement of objectives in lower courses is greater than in the case of the course under evaluation. This fact is particularly evident in the case of the 8th grade test which reaches from approximately 70% of the objectives for 4th grade, to 44% and 47,1% in 8th grade. That is to say that there is a progressive delay as for what it is a progressive delay as for what it is expected from each level. The achievement of the objectives is reached after it was expected: the behaviours which were to be attained in 4th grade, were only achieved in 8th grade.

In accordance with the publications of the Program, "it is necessary to carry out an exhaustive review of the objectives in terms of the

Test 4th basic (National averages)

Objectives	Medium percentage of correct answers	
	(1982)	(1984)
Percentage of achievement of objectives of 2nd basic that were included in the test of 4th basic	59.8	62.3
Percentage of achievement of the objectives of 4th basic	50.5	53.1

Test 8th basic (National averages)

Objectives	Medium percentage of correct answers	
	(1982)	(1984)
Percentage of achievement of objectives of 4th basic that were included in the test of 8th basic	71.3	72.2
Percentage of achievement of objectives of 6th basic that were included in the test of 8th basic	45.4	54.0
Percentage of achievement of objectives of 8th basic	44.0	47.1

existence of learning hierarchies in agreement with the development characteristic of the student, in as much as the lacks in the achievement of a minimum objective produces immediately a lower level of efficiency in the subsequent objectives of the hierarchy. We also believe it is necessary to review the teaching methods and the didactic materials used in the teaching-learning process of Mathematics based on the results that were obtained in these evaluation programs, on a national level. (See, for example: Arancibia/Roa 1986, Riveros/ Zanocco 1986).

With the purpose of making an estimation of the delay of the student with respect to the level they are in, Himmel, Majluf and Maltes (Himmel, 1986) established an index that expresses the delay in years. The analysis of this index revealed that the students in 2nd basic year are, in average, approximately, half year behind the expected efficiency in this course; in 4th basic year, about three quarters of a year; in 6th year 0.88 of a year; and in 8th year 1.27 of a year. This means that when the students leave the Basic Education they do not master not even objectives of 7th year corresponding to Mathematics. Brizuela, using the same index, obtains even greater delays in the V Region. Based on this information, we could infer that the situation at a national level is very similar (Himmel, 1986). This is rather serious, since it is known that a high percentage of the students that enter the G.B.E., do not finish it.

This analysis can be widened if we take into consideration the results that were obtained in each one of the objectives included in the reports of the PER, as for example, the years 1982 and 1984. Tables A.5 and A.6 of Appendix Nº5 show these data for the corresponding tests to 4th and 8th grades.

Looking at the registered informations, it is possible to observe that in general, as we advance in the hierarchy of the objectives, an each time lower level is obtained. For example, the objectives of 4th basic (corresponding to 1984) regarding addition and substraction of cardinal numbers reach an average of 60,1% of correct answers. As the operation gets more complex, this percentage decreases. Thus, for example, in the objective related with solving problems with cardinal numbers, only 42,8% of the objectives is achieved. The same thing happens with the information corresponding 1982, in which the same objectives decrease from 48.9% to 35%.

In order to consider the effect of this on the achievement of the objectives in higher levels, in 1984 it was observed, for example, that in an 8th grade 48,6% of solutions of whole number problems was attained, and this level was still lower in those objectives referred to operations with rational numbers. Thus, as problems get more complex, it becomes more evident the effect of the poor mastery of the simplest operations. The same thing happens when we transfer operations to a wider number set.

Another study that was carried out on these overall data, showed that in 1982 the lowest percentage in the solution of problems was achieved with a 35%, whereas in 1984 this figure increased to just 42.8%. "It is convenient to note that none of the problems included in the test, require the utilization of more than two operations to find the solution of the problem. One of the conclusions that resulted from the analysis of the problems is referred to the fact that students are not capable of interpreting correctly the question if it does not include a cognitive clue, for example; "total", "surplus", "all", etc. This means they can't identify the main elements distinguishing them from the superflous data, which could be seen in the problems that had irrelevant informations in which in most cases the students marked the choice that included all the data of the problem (Himmel, 1986).

With respect to the objective related to "reading and writing of fractions and express them in a unitary diagram and vice versa", that in both years (1982 and 1984) has a percentage of sucess over 60%, Himmel specifies that the cognitive process implied for this objective is not to be considered consolidated, because the students can only read and write common fractions and recognize their representation when it is shown in a circular diagram with adjoining fractions. Minimum perceptive variations that are introduced in the representation of fractions makes the problem much more difficult.

This also affects the capacity to solve problems which require addition or substraction of fractions of equal denominator. As a matter of fact, the percentage of achievement decreases in 1982 to 52.2% and in 1984 to 47.9%. The most frequent mistake, as a consequence of a transference of operations with natural numbers to operations with fractions; the students solve the problem adding and substracting numerators and denominators.

This same mistake persists, in higher levels when operations with fractions of different denominator are introduced. Moreover, in the rational number system, particularly the objectives related with addition and substraction, show very low percentage of achievement (37.1% in 1982 and 36.6% in 1984). The multiplication of rational shows a higher achievement (43,3% and 56.0% in 1984) and the division is correctly solved by 52.6% and by 39.8% of the students. "This could seem contradictory", observed Himmel (1986), "but the same tendency is found in the study of Brizuela (1982). A possible explanation of these results could be that multiplication and division algorism are simpler if they are compared to those of the addition and substraction of rational numbers, which would indicate a major facility for the mechanical memorization of the former".

As for the geometry objectives, they reach an average of 57.8% and 54.9% in the years 1982 and 1984, respectively, in the first cycle and similar averages in the second cycle and even lower if we consider the calculus of areas and perimeters of geometrical figures that reach only 39.7% and 36.7% on the same years. These facts would be indicating that the programatical units of geometry many times are not approached during the teaching-learning process, or they are put aside by students and teachers. Similar comments are made up with respect to the questions concerning set language which, as we already said, is considered very important. It was proved that when the comprehension of language is essential to solve the exercises, the percentage of correct answers remains near about 25%.

Another study related with the results obtained in the PER refers to the importance of the kind of institutions the students attend, as well as their socioeconomic level. (Schiefelbein/Arancibia 1984). In this study educational institutions are classified as follows:

Public:	
Metropolitan Area	(PMA)
Large Cities	(PLC)
Rest of the country	(PRC)
Municipal:	
Metropolitan Area	(MMA)
Large Cities	(MLC)
Rest of the country	(MRC)
Private Subsidized:	
Metropolitan Area	(SMA)
Large Cities	(SLC)
Rest of the country	(SRC)
Private	
Metropolitan Area	(RMA)
Large Cities	(RLC)
Rest of the country	(RRC)

The socioeconomic level of the students attended by the different institutions was characterized with letters: A (high level), B (medium level), and C (low level).

Tables A.7 and A.8 of Appendix Nº 6, indicate the national averages obtained in each one of the establishments according to the socioeconomic level of the students. They also show the number of the students considered in each case.

From these data, we may appreciate that within each educational establishment -public, municipal, private subsidized or private- the socioeconomic level of the students determines the performance reached in the test. In all the cases, the students with a high socioeconomic level obtain higher percentages than the students of a medium level and these, as well reach higher percentages than the students of low levels.

The greatest rates of variations are observed in the public establishment of the Metropolitan area (PMA) and in the establishment corresponding to "large cities" (PLC) that reach percentages of 22.5 and 21.9, respectively, for A and B, and of 25.9 and 25,8 respectively, for to A and C. The lowest rates of variation are given in the case of private establishments, independently of its location. These fluctuations reach values between 6.1 and 4.5 between A and B. It is important to note, that this category do not include students of low socioeconomic levels.

This group also presents the highest performance, reaching values that in the case of higher socioeconomical level fluctuate between 75.5% and 77.3% and for the medium level between 70.5% and 71.2%. These latter correspond to values higher than those reached by the rest of the students of the establishments considered, excepting those included under PMA and PLC.

The group of students with a performance over 70% correspond to only 12,791 of a total of 196.761 included in this analysis. The rest of the students reached maximum values that fluctuate between 61.8% and 69.9% for level A; 51.5% and 58.4% for level B; and 44.9% and 51.8% for level C.

The worst performance is observed in students of low socioeconomic level who attend public, municipal or private subsidized establishments, classified as "the rest of the country", that is, PRC with 47.9%; MRC with 44.9%; and the SRC with 45.4%.

The "Prueba de Aptitud Académica" (Academic Aptitude Test) and the "Prueba de Conocimientos Específicos de Matemáticas (Mathematic Specific Knowledge Test)

In 1966 a process began aimed at a standarization of the procedures by means of which schools-leavers applied to all universities in the country. Since then, one of the main criteria of this selection is the "Prueba de Aptitud Académica" (PAA) which is given every year by more than one hundred thousand students who have finished Secondary Education. This test measures "the ability that has the student to reason in a verbal and a mathematic spacial context. These two contexts are chosen because they represent a sort of general feature that is indispensable to follow any superior studies". (Díaz, Himmel..., 1985).

The P.A.A. is formed of two parts, verbal and mathematics. The latter, (P.A.A.M.T.) includes problems that require the application of knowledge and skill in arithmetic, elemental algebra and geometry.

The score obtained in the P.A.A.T. depends on the results of each year. Each score is corrected substracting from the number of correct answers (gross score), a fourth part of the wrong answers. The results that are published correspond to a linear transformation of the corrected scores, according to the average and variability of the punctuations of the all of the applicants of each year. This transformation disguises the true performances of the students, which are reflected in the gross score.

In the period 1967 to 1984, analyzed by Díaz, Himmel, ... (1985), the average of the gross scores in the P.A.A.M. has been gradually increasing from 16.1 in 1967 to 24.0 and 23.6 in 1983 and 1984 respectively. This, considering a total of 60 questions in the periods 1967-1974 and 1980-1984, and 50 questions in the period 1975-1979. The degree of difficulty, calculated as a medium average of the corrected scores, has fluctuated between 40% and 54%. These figures correspond to all the people that gave the test in 1967, approximately 30.000 applicants, which have increased significantly, totaling between 85.000 and 120.000 from 1973 to 1984. The P.A.A.T. is passed every year by people who finished school that year, as well as other who had finished on previous years, and who desire to obtain higher scores in order to study at the university, or by people who want to change their career or start another one, since it is necessary to pass again through all the selection process.

Concerning the applicants that repeat the P.A.A.T. an important group of those who obtained low scores the first time, have obtained somehow better results in subsequent opportunities, but there is a considerable group that, having an initial score in the medium range, obtains an outstanding improvement in subsequent opportunities due to a better preparation.

The variability of the gross scores has also increased gradually since 1967, which is reflected in an increment of the standard deviation from 11.38 to 15.90. This may be attributed to the massification of the demand for higher education, which results in an each time more heterogeneous population of applicants concerning the development of its cognitive skills.

In order to determine the possible influence of macrostructural variables in the diversity of the performances in the P.A.A., a study was carried out where five different structural levels of educational establishments were identified, characterized according to their financing source, their geographical location and the socioeconomical profile of the attended population (Himmel, Majluf, Maltes (1982). A stratified sampling was made, chosing at random ten schools of each structure and ten students of each school; thus a sample of 500 students was obtained.

For the mathematical part of the P.A.A. it was found that the macrostructural effect is highly significant, which indicates that the medium performance of the students who came from school belonging to different structures differs considerably. The following table, taken from the work abovementioned, shows the averages of the scores of the students of each structure.

STRUCTURE	KIND OF SCHOOL	AVERAGE
1	Favoured Metropolitan Private*	651.17
2	Medium Metropolitan Private*	539.50
3	Medium Metropolitan Subsidized	500.14
4	Medium Metropolitan Public	481.83
5	Medium Public VI Region	438.31
	General Average	522.15

* Favoured and medium private schools, were distinguished according to the amount of students enrolled.

The statistical analysis of the distribution of the scores of this sample, determined that the total percentage of the explained variance is 49.97% of which 32.1% corresponds to macrostructure and 17.85% to the school protected by the structure. As an example of this last case, we can compare the average of the schools with best and worst performance in the P.A.A.M. within each structure, reproduced in the following table.

Several empirical studies have verified that the P.A.A. is a good indicator of the performance of the student at the university and that the mathematical part has a higher capacity of prediction than the verbal part, even in humanistic careers. Its importance is significant in the prediction of marks in the two first universitary semesters. However, a statistic

STRUCTURE	KIND OF SCHOOL	BEST AVERAGE	WORST AVERAGE	DIFFERENCE
1	**Fav. private M.**	660.90	527.30	133.60
2	**Med. private M.**	596.40	466.31	130.09
3	**Med. subsid. M.**	519.50	429.00	90.50
4	**Medium public M.**	620.20	421.50	198.70
5	**Medium public VI R**	519.70	389.30	130.40

(Source: Himmel, Majluf and Maltes, 1982)

analysis carried out in the Faculty of Sciences of the University of Chile, "the unmistakeable conclusion was obtained that there is no relation between P.A.A. scores and success at the University". (Contreras, 1987).

Within the selecting process to enter to the universities, there are tests whose purpose is to "obtain additional information of the applicants with respect to their level of knowledge about specific disciplines, since the marks of the secondary education do not permit to make a diagnosis". (Díaz, Himmel,... 1985).

These tests of Specific Knowledges were taken between 1967 and 1971, then they were interrupted for three years and again included as from 1975. Originally, they were recommended especially in the case of those careers with many applicants and a limited number of vacancies, but as the demand for other careers increased, they incorporated one or more tests of Specific Knowledges among their requirements. The tests are prepared by university teachers "according with the expected behaviour of students who enter the superior education, based on the current program of the secondary education.

One of the tests of Specific knowledges deal with Mathematic (P.C.E.M.). The number of applicants that give it, increased progressively between 1967 and 1971 (from 8.226 to 36.063). From 1975, it is yearly given by approximately 80,000 applicants, since the number of careers requiring it increased significantly.

During the first period, (1967 - 1971), the average of the gross score obtained in the P.C.E.M. was between 3 and 5 right answers, of a total of 39 or 40, depending on the year. In the second period, (1975-1984), the average of the gross scores increased from 4.3 (of a total of 40 questions) to 8.9 (of a total of 50 questions), reaching 10.8, with 50 questions in 1980. This means that only once the mean percentage of correct answers has been 20%. The variability of the scores has also been increasing, which proves the diversity of the applicants, and probably also the preparation to the test.

The degree of difficulty, calculated basing on high corrected scores, minus the fourth part of the wrong answers, has been approximately equal to 25% varying between 19% and 32%.

The study of Himmel, Majluf and Maltes (1982) on the effect of macrostructural variables in the performance, which we already mentioned when we analyzed the P.A.A.M., also included the analysis of the P.C.E.M. In the following table we can appreciate such results.

STRUCTURE	KIND OF SCHOOL	AVERAGE
1	Fav. private Metropolitan	597.32
2	Med. private Metropolitan	508.61
3	Med. subsid. Metropolitan	501.37
4	Medium public Metropolitan	464.78
5	Medium public VI Region	448.35
	General average	504.09

In this case, 30.72% of the variance is explained by the structure, while the school explains the 18.25%, which is a higher contribution than the one in the P.A.A.M. In addition, this table shows a greater variability among the schools of each structure, which may be attributed to the fact the objectives of the Secondary Education are measured more directly.

Based on the results of the P.C.E.M. different analysis of the achieved and not achieved objectives in Secondary Education.

Salinas (1978) made a study of the period 1967 - 1971 verifying that the answers are more difficult as the levels of mathematical thought increases. Prauss (1984) showed the decreased tendency in the achievement of more complex objectives of the mathematical reasoning.

Rodriguez and Levet (1983) analyzed the results of the P.C.E.M. in relation with the program of mathematics for the secondary education through eleven applications (from 1967 to 1980). They started from the consideration that the educational reform of 1967 modified substantially the plans and programs of mathematic for the medium level, introducing contents of major level of abstraction than the traditional. In order to determine the influence of such reform on the learning, they classified the objectives of the Secondary Education according to the following guide: Objectives that always have received preferent attention in the programs, related with: operations with fractions, rules about powers, rules about roots, trinomial of second grade, change from verbal language to mathematical language, proportionality of segments, metrical relations in a triangle and properties of similarity.

Among the objectives that have been emphasized as from the 1976 reform we may distinguish:

- Objectives that always have been included in the P.C.E.M. related with: notions about sets, functions, rules of logarithms, rules of inequality and equations of straight line.
- Objectives incorporated to the P.C.E.M. as from 1975, related with: notions of logic, different types of numbers, algebra of complex numbers and properties of a law of composition.
- Objectives incorporated to the P.C.E.M. as from 1978, related with characteristic of vectors.
- Objectives that are introduced, are eliminated an reincorporated to the P.C.E.M. related to operations with matrixes.

With respect to the objectives that have always received preferential attention in the programs, the conclusion obtained was that those of Algebra are reached better when they imply: direct application of very exercised rules (multiplication of powers of a same base, extraction of the factor of a root), replacement and numerical calculus that only demand to know mathematical symbols (evaluate numerically a literal expression) and direct translation from verbal language to mathematical one (in simple situations). In Geometry, there are no easier contents or mental processes that result; even direct applications are difficult and the more exercised topics (like similarity of triangles) reach, in average, only 40% of right answers.

Rodriguez and Levet posed: "This permits to conclude that both in Algebra and Geometry the student has difficulties with those problems that require any non habitual deductive process or the applications of unfrequent or similar theorems. All this indicates a routinary teaching or memorization which does not care about the development of high mental processes or the application of complex rules. Though one of the purposes of Mathematic is to promote developments of thinking strategies the results that are found indicate that this does not happen in practice. Perhaps the most serious problem is that this does not happen in a specific moment, but the situation continues without variations during all the education".

In relation to the objectives emphasized in the reform of 1967, the grade in which they are reached by the students is slightly lower that one achieved in the traditional objectives. The percentages of omission are higher in the questions corresponding to the objectives of this second category (more than a 40% of the questions are omitted by more than 30% of the students) which may be interpretated as a product of a lower familiarity of the students with the topics emphasized by the reform because, even in 1980, they are less taught than the traditional ones.

There are no significant differences between the performance of objectives that have been always included, and those incorporated subsequently. Only those topics recently introduced (vectors and matrixes) show indicators that point out to an important lack of familiarity of the students with respect to them.

The topics emphasized from the 1967 reform keep their relative difficulty practically without variations during the analized period. The differences of percentage are scarce with respect to problems qualitatively similar and only increase in the case of absolutely different questions. This influence of the form of posing the problems on the degree of difficulty reveals how poor the knowledge of the students is. In the only objective in which there is a tendency to a major achievement, is in the application of rules about logarithms. Rodriguez and Levet said: "Probably, this is because they involve simple mental processes and, therefore, susceptible of learning by means of a continuous practice. In those objectives in which the students must put into practice high mental processes, instead, the fact of asking them repeatedly, does not seem to result in a better achievement".

It is probably that the best performance in the achievement of the traditional objectives depends on its early introduction in Secondary Education and the fact that they constitute pre-requirements for other learnings, both in Mathematics as in other subjects.

Among the conclusions of the work of Rodriguez and Levet we point out:

- The educational system works at levels of relatively low effectiveness; none of the objectives of the teaching of Mathematics examined are fully reached and only a few are fulfilled satisfactorily.
- The differences in the distribution of the knowledge among students can be proved by the following relation: of the 208 analized questions, only 15% of them are answered correctly by a percentage superior to 40% of the applicants; instead, 40% of the questions are answered correctly by less than 20% of the applicants.
- It is more probable that the system increases its effectiveness respect to patterns that can be developed by means of mechanical exercising in comparison with objectives that involve more complex mental processes and more abstract contents.
- The introduction of new programs of study, in 1967, meant a deep modification in the teaching approach of mathematics. It is logical to hope that the students achieve in a better way those objectives in which the teachers have a great educational experience, most of all if it is considered the lack of supporting elements, in order to implement the new programs (training courses, textbooks, etc.).
- The influence on Secondary Education of the Specific Mathematic Knowledge Test is very small and is just partially reflected in the knowledge that the students show with respect to specific objectives.
- In spite of the general low achievement, the predictive value of the Specific Mathematic Knowledge Test with respect to the performance at the university is high, given its high discriminatory capacity, according with the results obtained in the studies carried out at the Catholic University (Himmel, Maltes, 78/79) and at the University of Chile (Díaz and collaborators, 1980).

Some Experiences in the Ambit of Non-formal Education.

We would like to report three experiences carried out in our country: (a) The "Program of Mathematics for Adults" of the CIDE, (b) the "Learning workshops" of the PIIE and (c) the "System of University Education at Distance" of the Catholic University of Chile.

(a) The program of Mathematics for Adults, which took place at the Centro de Investigación y Desarrollo Educativo - CIDE (Educational Research Development Center), began in 1976 with an analysis of the needs of adults who work and study. The objectives of the program were chosen from the differences between expressed expectations and demonstrated aptitudes by the adults of the studied population. (Oteíza F., 1977, 1982).

The program is formed by teaching material, evaluation instruments and a complete system of administration and control. It was submitted to an empirical validity test, in order to show that, if used under specific circumstances, it permits achievement in learning, in generated attitudes and in the social behaviours of the participants, in agreement with the expectations of their designers.

It is a flexible program, adaptable to specific local conditions. It permits different rhythms of learning and options among learning alternatives. It has multiple entrances and permits to work individually or in group. It is partially administered by the students themselves. It is composed of brief units with simple and clear interrelations. Teaching contents cover the eight years corresponding to the formal system of basic education; number, the four basic operation, resolution of verbal problems, fractions, proportions and percentage, notions of geometry and measuring and several aspects related to the preparation of budgets together with some countable aspects. It is emphasized the analysis of problems taken from real labor situations, using approximation, graphics, partial solutions, reformulation of problems and verification of results. Its final objectives also include the capacity of studying independently a topic chosen by the own student, using the elemental existing literature on Mathematics.

The methodology implies a direct interaction of the student with the teaching material, in addition to frequent interactions with other students of his own group. Each participant has a control of his own learning process, which permits him to know his position within the program and take decisions concerning the alternatives that he has to go on. The student is responsible for his progress and he decides when he wants to be evaluated. The teacher helps the group to take decisions, explains the doubts to those who need it, suggests alternatives, guides the students who have lost the direction of their works, etc.

With respect to its curricular organization, the program was structured, classifying all of the specific objectives in a matrix. This one includes 17 vertical lines, which classify the objectives by contents (numbers, addition, substraction, etc.) and 16 horizontal sections which classify it according to relations and sequence. The hierarchy of the objectives was made based on an analysis of tasks within the theorical framework of R.Gagné. In this way, a student that follows the program obtaining a good mastery of the objectives of a specific vertical line (for example, decimals) once he reaches a horizontal section he may choose between go on working on decimals or change to another thematical line (like fractions or geometry) starting by the objective indicated in his control paper; if he respects this specification, he should not have any problem to go on. This structure permits a differential entrance to the program, according to every student conditions, properly evaluated.

The generated learning system has a modular character. The objectives were analyzed in 279 bulletins of self-instruction, using a very simple language in the first sections, and each time more complex as the student advances to higher sections of the described matrix. A set of evaluation instruments was also developed.

Due to its technical-administrative characteristics, this program may be adapted to a wide range of educational situations. The program has been tested with participants of the Formal System of Education for Adults of urban Santiago (1977 and 1978), with workers of self-managed enterprises (1978 and 1979), agricultural workers of a poultry-breeding community near Santiago (1977 and 1978) with fishermen of four coast towns of a harbour in the north (1978 and 1979) and with peasants who were attending the courses of the Instituto de Educación Rural (Rural Education Institute) in 1978 and 1979.

The results that were observed reflected important achievement in the proposed mathematic objectives, an increase in the capacity in comprehensive reading, positive attitudes towards learning and behaviours which showed capability of self-direction, cooperation, independence and perseverance in learning tasks.

The end of financing of this project and the withdrawal of its director from the institution where it was developed, constituted, apparently, the fundamental reasons why, at present the program is no longer being implemented.

(b) The program of Learning Workshops is a project developed by the Programa Interdisciplinario de Investigaciones Educativas - PIIE (Interdisciplinary Program of Educational Research) which works with children from marginal sectors of Santiago and provinces, who have learning problems at school (Vaccaro L. et al., 1985). Young people of the community (monitors) are prepared to work voluntarily with groups of children, helping them to overcome their school and emotional problems, and to raise their self-respect and the capacity to work in group. The autonomous organization of workshops is encouraged by means of a net formed by monitors, coordinators and one local responsible person, who perform administrative tasks and look for complementary resources. The project has a professional staff that takes part in the preparation of new workshops, giving advice to the groups that ask for it and providing them with educational material.

The Learning Workshops help in Mathematics through two brochures that form part of the training program of the monitors. Both of them suggest the manufacture and handling of a concrete material to practice the four arithmetical operations with small numbers: even - uneven cards and the abacus.

In the following table you can appreciate the scope of these Workshops from 1978 to 1985.

Period	Directly Supported Groups		Autonomous Groups	
	Nº workshops	Nº Children	Nº workshops	Nº Children
1978 - 79	20	221		
1980 - 81	148	2627		
1983 - 84	149	2274	48	855
1985	71	797	35	645

(c) In the context of looking for new ways to improve the quality of the educational system, the TV program Sistema de Educación Universitaria a Distancia - TELEDUC (University Educational System at a Distance (TELEDUC)), directed to teachers (CIESPAL, UNESCO, 1982).

The program composed of 12 units functioned like an advance training course. Teachers enrolled received written material which latter formed the textbook "Cómo aprenden Matemáticas los niños" ("How do children learn Mathematics"). Both the printed material and the TV programs provided methodological strategies for the teaching-learning process of the most important subjects of the Basic Education , helped by concrete materials and graphics. Its purpose was to overcome the professional isolation of many teachers of the country, and to encourage the adoption of new methodologies. According to the possibilities, it was propiciated the communication between university and elementary level teachers, by means of presential tutorials. At present, the program is no longer produced nor transmmitted. Only the text exists, which that may be purchased at the Universidad Católica de Chile.

Later on, the same authors of TELEDUC took part in the program for children "Oreja, Pestaña y Cejas" with a space called "Telejuegos telemáticos". There some problems were posed, which required elemental knowledge of mathematic an which implied the application of a strategy in order to solve them. The viewers sent their solutions by post. It is also used a magazine associated to the TV program so to give additional problems.

This alternative of mathematic non-formal education was also interrupted due to financing problems.

General Conclusions and Outlines for the action in the field of teaching Mathematics

The teaching of Mathematics has basic importance in the development and formation of the student as a person. It has not only an informative value, by most of all an educational value, particularly emphasizing its influence in the development of the logical thinking and creativity.

Nevertheless, studies on school performance and the activity in the classroom show that the most successful learning processes correspond to simple and mechanical mental processes, that are applicable under very specific instructions.

In order to improve the quality of learning of Mathematics different resources have been tried: reforms of plans and programs, final exams, training of teachers, production of didactic material, etc. However, it seems there exists a certain of resistance on the educational system's part, to the proposed innovations and implemented by the Central Administration. We consider, as Rockwell (1982), that "the official educational regulations are not introduced in the schools exactly as they are originally formulated. They are received and interpreted by an existent institutional order and by several pedagogical traditions that have an important role in the institutions. It is not simply a matter that some practices correspond to the norms and others "go apart" from them. All of the school experience is involved in this dynamic between the official regulations and the school reality. There are certain aspects of the "school culture" formed by a set of traditions shared by teachers, directors, parents and students, and have an inertia that is frequently disregarded when introducing curricular change. Montero (1986) mentioned among these traditions: the worry for "passing all the subject matter", the almost exclusive legitimacy of the expository class, the conception that the school teaches universal truth of univocal significance, and the identification between evaluation and qualification of cognitive achievements. In agreement with Montero (1986), we believe that it is necessary to investigate the relation between the teaching of Mathematics and school culture in order to "get to know reality in such a way to design an efficient and systematic change strategy". Only the clarification of both implicit and explicit myths and regulations that affect the teaching of Mathematics will permit to take them into consideration when preparing concrete propositions.

As a general outline, we think that the transformation of those aspects of school culture that hinder the improvement of the teaching of Mathematics requires that the teachers become aware of the importance of traditions and make a critical reflection of groupal character. In our opinion, an interesting way to foment the interaction among teachers, is through systematization and propagation of innovative experiences in the field of the teaching of Mathematics, through publications and periodical meetings promoted by teachers associations.

The continuous transformations suffered by the 1967 curricular reform have resulted in program which, in our opinion, does not show an organic strong and scientifically fundamented structure. Have the contents to be treated, their hierarchical arrangement and location in time, any relation with the psychological development of the student?, do they form a mathematical structure that can be assimilated as it is by the student, do they correspond to those contents of higher formative value and to the fundamental aspects of the discipline?. These and many other questions arise from the analysis of the programs.

The official methodological recommendations, though pertinent, are unsufficient and too general. Therefore, they do not constitute, an effective guide for decision making of the teachers regarding their task in the classroom, concerning the adaptation of objectives, activities and program contents, to the needs of the students and the conditions under which the educational activity is performed.

We believe it's necessary to foment and develop lines of researches around problems such as the development of mathematical concepts in children, the analysis of the fundamental mathematical concepts and of the most suitable teaching methods, which are the main contents to be included in a modern program of Mathematics, the formulation and hierarchical organization of objectives, performance problems, evaluation, etc.

The textbooks distributed by the Ministry of Education which are used in the majority of the educational centers of the country, are generally a support to the process of practicing. Exercising the subject itself is taught by the teacher independently from the textbook, even sometimes in a different way, that is why we considered necessary to provide the teacher and the student, with materials that show in a coherent and balanced way, exercises and content, not only giving to operations and their practice, but also to the understanding, application and other formative aspects of the subject. Such supporting material must facilitate effectively the teaching-learning process and, therefore , have a solid base, both from the points of view of the discipline itself and of the methodology that will be applied. In its elaboration, it will be necessary to rely on a modern view of Mathematics and on the contributions given by disciplines such as psychology, sociology and educational technology to the teaching-learning process.

This direct support to the educational task in the classroom must be necessarily accompanied by a permanent training process of the teacher. Training courses given by the different organisms mentioned in our report offer to the teacher a variety of contents that obviously do not respond to a general plan oriented to a concrete goal, to a common objective previously analyzed. We think that such courses, although they can help to the general training of the teacher, do not modify significantly the direct work in the classroom.

The distance training courses offered directly by the CPEIP, though they have a common objective, they seem to lack of the necessary continuity to ensure the desired changes at the classroom level. However, it is worth to point out that the distance training methods may constitute an excellent way of training given the specific geographical conditions of our country, that impede, for example, the organization of presential courses.

We believe that the training activity may have its maximum effectiveness in the extent it does not constitute a task apart from the classroom activity, but having a direct relationship with the concrete problems that the teacher must solve in it. This does not mean that its contents only permit to reach the strictly necessary levels to teach the programs, but they must permit to understand them and analyze them with solid knowledge of the subject and the methodological and formative aspects in general.

We think that the teacher training may be achieved both by a guided application of supporting materials within the classroom, as well as by means of discussion and analysis of the obtained results and his active participation in the process of making the necessary restructuring or arrangements.

Among the most serious problems that we have appreciated after making this analysis, we can mention the immense differences in the performance of students coming from different socioeconomical levels. National evaluation of performances show more or less satisfactory results in high income levels, but they are absolutely insufficient in low income sectors.

Obviously, life conditions of the poorest sectors constitute a barrier very difficult to overcome and which obstructs a satisfactory school performance. However, we think that some typical features of the school system, instead of alliviating these differences, seem to increase them. Accordingly, we could observe that the schools attended by children in rural environments or in popular districts of large cities, differ from those situated in high income districts, not only in their physical infrastructure, but also in those aspects related to remuneration and work conditions of the teachers, to the didactical materials available, in the methodologies that are used, and even in the plans and programs that govern the establishment. This obviously is reflected in the school performance of the students, with the results we have summarized in our study.

We believe it is necessary to carry out more detailed studies on this problem, with the purpose of determining with certain accuracy the main intra and extraschool mechanisms leading to these results. On the other hand, independently of the measures that could be adopted and which affect the school system as a whole, we think it is possible and necessary to encourage a working program with the purpose of improving the learning of Mathematics in children coming from rural areas and from the poorest sectors of urban areas.

Non-formal education is, for an important part of the population, a real alternative, perhaps the only one, to have access to knowledge. The examples of non-formal education described in this report show alternative patterns of education which are feasible and with great possibilities. The program of "Mathematics for Adults" of CIDE, for example, opened the way to the genesis of new strategies of curriculum design, firmly established in the knowledge of the local educational reality. It is really necessary to restore and maintain this kind of efforts nowadays.

As for the teacher training, we would like to emphasize two aspects that we consider of great importance.

The first one is related to the fact that the career of teacher has not a university degree and can therefore be given by any professional institute where research and duration are not necessarily basic elements. In our opinion such a difficult task, which needs precisely of a scientific and serious base, should be carried out in organisms where research and education go together. When this vital relation education-research is broken, the first one looses projection and may become a simple routine.

The second aspect has to do with the variety of organisms and, in consequence, of programs, plans, objectives, etc., that is observed in the pedagogical career. This causes inequalities in training, which will obviously be reflected in the concrete activity developed by the future teacher. Therefore, it is necessary to try to restore the previous status of the career of teacher, and uniform its criteria, mainly in its basic aspects such as duration, level of requirements and contents in general.

Evidently, the current labor condition of the teacher constitutes an element that hinder any measure to improve his teaching. Instability, excess of work, poorly remunerated and lack of social acknowledgement, lack of the minimum resources to develop his activities, excess of students, do not allow to carry out properly the teaching of Mathematics in our country. In order to obtain the desired changes, the labor conditions of the teacher must improve substantially, and his work must be properly appreciated.

Finally, we want to point out that the multiple problems that affect the educational system in the country "can not be solved by the teacher, though he or she may have excellent qualifications, nor by the educational sector, though it may be very well structured. It is necessary the coordinated and planned action of all the sectors of national activity: health, work, etc. since education is what connects all aspects of cultural, political and social life of society, moving them towards change and development, or retaining and deforming them" (Vera, H. 1985).

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APPENDIX Nº 1

1. Specific Contents of the Program of Mathematics in Secondary Education. Common Plan.

First year of Secondary Education

Unit I: Introduction to Algebra in R.

- Unconventional introduction of number sets set
- Numbers with periodical and non periodical decimal development
- Problems that have no solution in Q. Square root of positive rational numbers. Decimal approximation.
- Decimal developments as patterns of real numbers.
- Proportions. Concept and properties. Direct and inverse proportions; properties. Graphics. Proportionality constant (ratio). Repeated proportions (or "series of equal ratios"). Practical problems about %, interest, etc.
- Operations with algebraic expressions. Reduction of similar terms; suppression of brackets in algebraic expressions.
- Operations with whole exponent powers. Multiplication and division of equal base powers. Scientific notation.
- Distributivity of the multiplication with respect to the addition: factorization and simplification of algebraic expressions: notable product.
- First grade equations with one unknown quantity.

Unit II: Congruence and geometrical constructions

- Simple situations of Euclideian geometry exemplifying primitive terms, axioms or postulates, definitions and theorems.
- Main elements in a triangle. Theorems related with angles and/or sides in a triangle.
- Simetral of one line.
- Bisectrix of an angle.
- Secondary elements in the triangle; notable points
- Criteria of congruence between triangles. Theorems of the isosceles triangle. Axial simetry. Theorems referred to triangles, parallelograms and trapezoids.
- Perimeter of a circumference. Area of a circular region and a circular sector; angle of the center. Circular graphic.

Second grade of Secondary Education

Unit I: First grade equations and inequalities system

- Simple exercises of functions in R. Domain and travel.
- First grade function and its graphic. Straight line equation.
- Notions of a straight line's slope. Distance between two points.
- First grade equation systems with two unknown quantities; graphic and analytic solution. System of equations with more unknown quantities.
- Parallel and perpendicular situations between two straight lines in the plane.
- Order in R. First grade inequalities and properties. Absolute value. First grade inequalities with one unknown quantity; solution set.
- System of first grade inequality with two unknown quantities. Graphical solution of elemental problems of linear programming.

Unit II: Circumference and geometrical places.

- Theorems related with inscribed angles, angles of the center and to chords. Tangents to a circumference. Relative position of two circumferences.
- Set of points that meet a specific condition (geometrical place). Capable arc of an angle.
- Construction of triangles with primary and/or secondary elements.
- Rights and planes in the space. Relative positions of straight lines and planes in the space.
- Areas and volumes of solids. Cube and parallelepipedon; prism and pyramids; sphere, cylinder and cone.

Third year of Secondary Education.

Unit I: Second grade equations and roots.

- Concept of "n" root of a real positive number. Properties of roots. Powers of real positive base and rational exponent. Multiplication and division of roots. Rationalization of denominators.
- Second grade function and its graphic. Zeros in a quadratic function. Second grade equation; solving methods. Properties of roots or solutions to a quadratic equation. Coordinates of the vertex of a parabola. Irrational equations reducible to first and second grade equations.

Unit II: Proportionality and Similarity

- General Thales theorem. Segments determined by a parallel to one side of a triangle. Harmonic division of a line in ratios of the same absolute value.
- Similarity and similar figures; similar triangles; criteria of similarity. Applications: a) proportional segments in rectangle triangle; b) proportional segments in the circumference. Power of a point respect to a circumference. Aureus or divine section of given segment.

Fourth year of Secondary Education

Unit I: Logarithms and systems of second grade equations.

- Exponential and logarithmical functions; graphics. Domain and travel.
- Concept and properties of logarithms. Basic operations with logarithms. Use of the calculator.
- Exponential equations reducible to first and second grade equations.
- Canonical form (a + bi) of a compound number; graphic representation. Equality of compound numbers. Operations in C. Power of i. Conjugated compound numbers. Module of a compound number.
- Systems of second grade equations with two unknown quantities.

Unit II. Elements of Descriptive Statistics and Probability.

- Notions of population and sample. Distribution of frequences. Histogram and polygon of frequences.
- Stadigraphs of positions or of central tendency: half arithmetical mean and mode.
- Stadigraphs of variability or dispersion: typical or standard deviation.
- Intuitive idea of probability as relative frequence. Rule of Laplace for equiprobable and incompatible events. Finite sample space and event (or happening). Probability of union and intersection of two events; complementary events. Conditional probability.

2. Specific contents of the Program of Mathematics in Secondary Education. Elective Plan.

Matrixes and determinants.

- General concept of matrix; matrixes of second and third order. Equality of matrixes.
- Addition of matrixes. Properties. Matrix additive equations. Ponderation of a matrix by a scalar. Multiplication of matrixes. Properties. Solution of first grade equation systems: Gauss's method.
- Inverse matrix of a non singular matrix. Matrix multiplicative equations.
- Determinant of a matrix of second and third order. Solution of first grade equation systems: Cramer's rule.

Plane trigonometry

- Trigonometrical ratios in the equilateral triangle. Fundamental identities. Values of trigonometrical ratios for notable angles.
- Trigonometrical functions in a circle with a single radius. Graphic of sine, cosine and tangent functions of an angle.
- Simple trigonometrical equations.
- Sine and cosine's theorem. Resolution of triangles.

Plane analytical Geometry

- Cartesian coordinates. Distance between two points of the plane.
- Slope of a straight line. Different types of equations of a straight line; graphics.
- Condition of parallelism and perpendicularity of two straight lines. Distance between two parallels straight lines and between a point and a straight line.
- The circumference as geometrical place. General and particular equation of a circumference with given center and radius.
- The parabola, ellipse and hyperbole as geometrical places; graphic. Elements and basic equations of these curves.

Computer elements

- Historical antecedents of automatic computers. Basic organization of a computational system and its functioning structure. Binary system.
- Use and description of the arthmetical, algebraic and trigonometrical basic functions of a minicalculator. Definition of simple problems and algorithms for their solution. Diagrams of flux.

Intuitive notion of derivative of a function

- Successions and converging series in the real straight line; intuitive idea of limit.

- **Notion of limit of continuous function.**
- **Derivative of a function.** Geometrical and cinematical interpretation.
- Maximum and minimum as a first derivative.

Elements of combinatory

- Multiplicative principles of two or more finite consecutive events.
- Exchanges and simple arrangements.
- Simple combinations.
- Binomial coefficient; properties. Theorem of the binomial for natural exponent.

Geometrical applications.

- Regular polygons inscribed and circunscriptive within a circumference. Sides and apothems of fundamental triangles in function of the radius, using trigonometrical ratios.

Areas of regular polygons.

- Calculus of π Squaring the circle.
- Solution of geometrical problems by means of algebra.
- Plane linear transformations and matrixes; writing in vectorial and matrix language.

APPENDIX Nº 2

Articles published in Revista de Educación (Education Magazine) in the Mathematics Area during 1980-1985

Year	Titles	Author	Magazine Nº	Page.
1980	Final test of Mathematic for the first cycle of the G.B.E.	T. Jarufe and H. Zavala	76	42 - 44
	The teaching of Geometry	T. Jarufe	77	10 - 11
	The circumference and its elements	F. Parra	77	11-16
	4º International Convention of the Mathematic Education	T. Jarufe	82	62
1981	Mathematical Plays	S. Navarro	84	42 - 45
	Methodological Guidance G.B.E.	H. Zavala	87	13 - 15
	Strategy for the teaching of the basic operations	H. Zavala	87	39 - 42
	Graphics, an instrument for the natural sciences and geography	T. Jarufe	89	14 - 18
	Evaluation of learnings in Math.	T. Jarufe	90	50 - 53
	Integrated method for the learning of mathematic	F. Cox S.	93	41 - 45
1982	The application of the new program of Mathematic in basic school of province of Arauco	E. Ramirez S.	102	36 - 39
	Test of Mathematic. Secondary Education. Common Plan	T. Jarufe	101	17 - 19
	Didactical Lottery	C. Concha	101	38 - 39
1983	The system of decimal numbering in G.B.E.	H. Zavala	109	30 - 31
	The methodological strategy of laboratory	P. Zanocco and M. Riveros	113	29 - 32
1984	The Geometry at school	J. Orellana	120	18 - 21
	The Simmetry topic	F. Jorquera	120	22 - 25
	Simmetry and crystals	Dra.R.Rodríguez	120	26 - 28
	Introduction to the concept of angle	H. Zavala	120	29 - 32
	Proportionality and its applications	T. Jarufe	121	34 - 38
1985	The teaching of geometry in G.B.E.	M. Riveros and another	130	44 - 46
	Self direction to learn math.	P. Montero	126	16 - 18

APPENDIX Nº 3

Table 1
Institutions that train teachers of Mathematic for Secondary Education.

NAME OF THE CAREER	INSTITUTION	HOUSE	DURATION
B.A. in Secondary education with a Major in Mathematics	University of Concepción	Concepción	9 semesters
Teacher of Mathematics	Catholic University of Chile	Santiago	10 semesters
Pedagogy in Mathematics	Metropolitan Univ. of the Sciences of Education	Santiago	10 semesters
Pedagogy in Mathematics	University of La Serena	La Serena	9 semesters
Pedagogy in Mathematics and Physics	University of La Frontera	Temuco	10 semesters
Pedagogy in Mathematics	University of Playa Ancha of Sciences of Education	Valparaíso	10 semesters
Pedagogy in Mathematics	Professional Inst. of Chillán	Chillán	10 semesters
Pedagogy in Mathematics	Professional Inst. of Osorno	Osorno	9 semesters
Pedagogy in Mathematics	Blas Cañas Inst.	Santiago	10 semesters

Table 2
Institutions that train teachers of Basic Education

NAME OF THE CAREER	INSTITUTION	HOUSE	DURATION
Pedagogy in G.B.E.	Catholic University of Chile	Santiago	10 semesters
Pedagogy in G.B.E.	Metropolitan University of the Sciences of Education	Santiago	8 semesters
Pedagogy in G.B.E.	Catholic Univ. of Chile	Talcahuano	10 semesters
Pedagogy in G.B.E.	University of La Serena	La Serena	6 semesters
Pedagogy in G.B.E.	University of Playa Ancha of Sciences of Education	Valparaíso	8 semesters
Pedagogy in G.B.E.	Professional Inst. of Osorno	Osorno	7 semesters
Pedagogy in G.B.E.	University of Talca	Talca	5 semesters
Pedagogy in G.B.E.	Catholic Univ. of Chile	Villarrica	10 semesters
Pedagogy in G.B.E.	Catholic Univ. of Chile	Temuco	10 semesters
Pedagogy in G.B.E.	University of Atacama	Copiapó	8 semesters

APPENDIX Nº 4

Table A. 1PER
Sample of objectives and its corresponding items 2º Basic grade

Topics	% of items	Sample of objectives	Sample item
Numbering	10.2	To identify the predecessor and/or successor of a given number	The successor of 47 is 7 46 48
		To establish equivalents of one hundreds, tenths to units and viceverse	50 unities are equal to ☐ tenth 5 50 55
		To determine the positional value of the figures of a given number	In the numeral 67 the 6 is equal to 6 unities 67 unities 6 tenths
Addition of cardinal numbers	9.3	To solve exercises of addition of cardinal numbers that fulfil with the following conditions: Three terms, in horizontal position, without reserve	35 + 14 + 20 = ☐ 59 69 79
		To solve problematical situations that, in order to be solved, require of an addition of cardinal numbers.	We are a group of 8 friends playing. If other three children arrive, how many are we going to be in the group? 11 12 24

Table A.2 PER
Sample of objectives and its corresponding items. 4th Basic grade.

Topics	% of items	Sample of objectives	Sample of an item
Numbering	7.2	The following objectives must be achieved in the numerical ambit of the cardinal numbers 0 to 999,999. To write and read numberals in the indicated ambit.	The number 3.003 is read -three thousand and three hundred -three thousand and three -three hundred and three
		To establish relations of "greater" or "less than" between a pair of given numbers, using the respective symbology.	Choose the correct relation, Remember: > Greater than < Less than 3.426 > 5.646 1.403 < 1.303 7.648 < 7.468
		Break a given number down into addends, according to the positional value of the figures, (Viceversa).	3UM + 0C + 4D + 3U = ☐ 3.403 3.043 343
		Complete numerical successions.	Which is the missing number? 110 - 120 -130 3.110 - 3.120 - 3.130 5.110 - 5.120 - ☐ 5.130 4.260 4.130
Addition of cardinal numbers	7	To solve addition exercises of cardinal numbers in vertical and horizontal position, two or more addends with reserve and with and without parenthesis.	1.300 + 35 + 200 = ☐ 1.555 3.535 7.000
		To solve open numerical sentences of addition of cardinals.	☐ + 153 = 721 678 578 568
		To solve problems implying addition of cardinal numbers.	Mrs. Amelia has 20 egg-lying hens. She writes down every month the number of eggs they have laid: January : 300 eggs February : 290 eggs March : 309 eggs How many eggs has she collected from January to March? 899 599 590

Table A.3 PER

Sample of objectives and its corresponding items. 6th Basic grade.

Topics	% of items	Sample of objectives	Sample of an item
Numbering	7.6	The following objectives must be achieved in the numerical ambit from 0 to 99,999,999, of cardinal numbers. Given a number, expressed with addends as CM-DM-UM-C-D-U (viceversa), in developed notation	9UM+4CM+0DC+5UM +0C+3D+2U corresponds to the numeral: A) 9.453.200 B) 9.453.002 C) 9.405.320 D) 9.405.032
		To write down the numerical value of a given power	Which of the following powers represent the following multiplication: 5.5.5? A) 3^5 B) 5^3 C) 3^{15} D) 15^3
		To break a given number in its prime factors	The prime factors of the number 48 are: A) 24 2 B) 6 4 2 C) 3 2 4 2 D) 3 2 2 2 2
		Identify the maximum common divisor of two or more given numbers	The maximum common divisor of numbers 42; 63 and 84 is: A) 21 B) 14 C) 7 D) 3

Table A.4 PER

Sample of objectives and its corresponding items. 6th basic grade (continuation)

Topics	% of items	Sample of objectives	Sample of an item
Addition of cardinal numbers	0.5	To solve problems which require addition of cardinal numbers	A train carries 35 passengers in first class and 42 in second class. Which of the following questions is solved by means of addition? A) How many passengers go in each wagon? B) How many passengers are there in second class? C) If 20 passengers leave the train at a station. How many passengers will remain on the train? D) How many passengers are there on the train?

APPENDIX Nº 5

Table A. 5
National results PER 1982 and 1984
Mathematic Test for 4th basic grade

PERCENTAGE OF ACHIEVEMENT BY SPECIFIC OBJECTIVES	1982	1984
Numbering (read, write and classify numerals in the indicated ambit, break down a given numeral according to the positional value of the figures	57.4	61.7
To solve exercises of addition and substraction of cardinal numbers	48.9	60.1
To solve exercises of multiplication and division of cardinal numbers	51.4	58.8
To solve combined exercises of addition, substraction and multiplication of cardinal numbers using brackets	43.9	53.2
To solve problems requiring addition, substraction, multiplication and/or division of cardinal numbers	35.0	42.8
To read and write fractions and represent them in a unitary diagram and viceversa	61.4	62.7
To solve exercises and problems requiring addition and/or substraction of fractions of equal denominator	52.2	47.9
To write and read decimal numbers until hundredths	54.0	40.5
To identify and nominate regions, identify inside, outside and boundaries of a region, distinguish between body, region, polygon	57.8	54.9
To read graphics	43.7	63.9
To evaluate longitudes in m, dm, cm, mm	50.1	45.8

Table A. 6

National results PER 1982 and 1984
Mathematic Test for 8th basic grade

PERCENTAGE OF ACHIEVEMENT BY SPECIFIC OBJECTIVES	1982	1984
To solve problems requiring two or more arithmetical operations (addition, substraction, multiplication and division of cardinal numbers)	22.2	52.1
To solve exercises of addition, substraction, multiplication and division of whole numbers	45.6	53.9
To solve problems requiring addition, substraction, multiplication and/or division of whole numbers	47.1	48.6
To solve exercises of addition and substraction of rational numbers	37.1	36.6
To solve exercises of multiplication and of rational numbers	43.3	56.0
To solve exercises of division of rational numbers	52.6	39.8
To calculate percentages and solve problems with percentages	43.2	48.6
To solve problems applying proportions	39.8	45.1
To establish metrical relations between inside and outside angles in quadrilateral and triangles and between angles formed by two parallel straight lines and a secant	44.4	41.5
To identify poligons, polygonal regions and bodies	59.3	53.8*
To calculate perimeters and areas of the triangle, square, rectangle, circle and circumference	39.7	36.7**
To solve problems implying the calculus of the arithmetical media	37.5	57.2

*) To classify angles and identify elements of a circumference
**) To calculate perimeters, areas and volumes

APPENDIX Nº 6

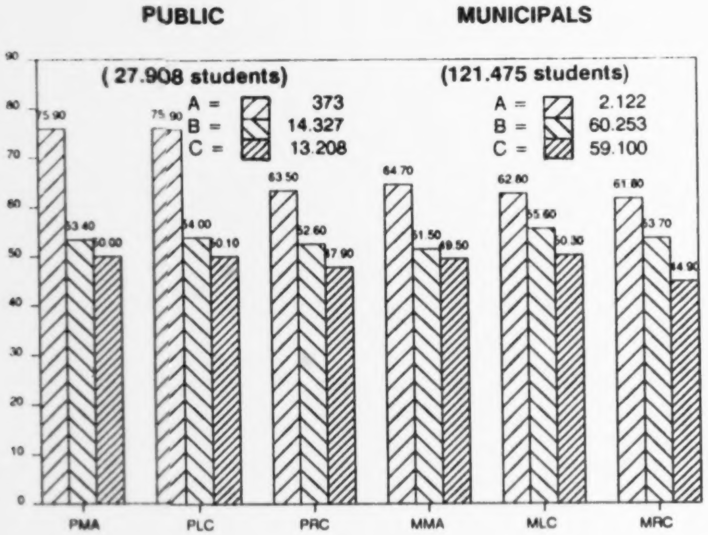
Table A. 7 PER
Performances in the test of 4th basic grade according to the type of establishment and socioeconomic level. 1982

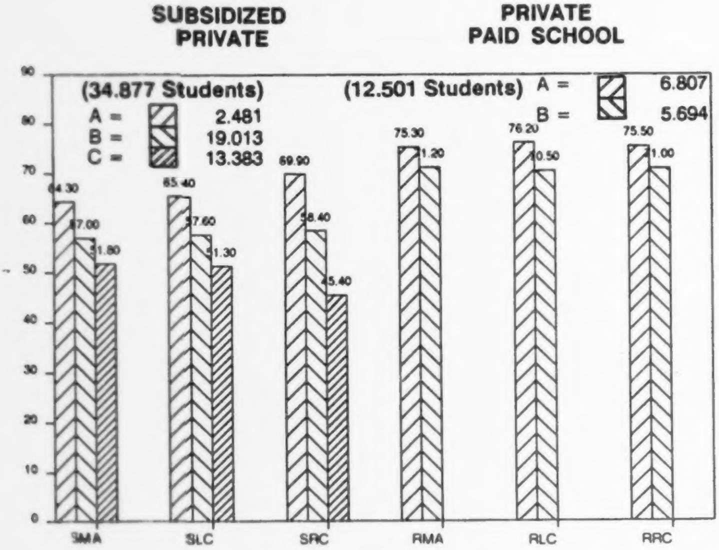
	Metropolitan region	National average	Nº students
RLC-A	77.3	76.2	6.616
RLC-B	71.2	70.5	3.987
RRC-A		75.5	191
RRC-B		71.0	1.707
PLC-A	75.9	75.9	290
PLC-B	53.4	54.0	11.413
PLC-C	50.0	50.1	11.012
PRC-A		63.5	83
PRC-B		52.6	2.914
PRC-C		47.9	2.196
MLC-A	64.7	62.8	1.699
MLC-B	51.5	55.6	22.870
MLC-C	49.5	50.3	28.160
MRC-A		61.8	423
MRC-B		53.7	37.383
MRC-C		44.9	30.940
SLC-A	64.3	65.4	1.429
SLC-B	57.0	57.6	11.661
SLC-C	51.8	51.3	8.678
SRC-A		69.9	1.052
SRC-B		58.4	7.352
SRC-C		45.4	4.705

R: Private schools
P: Public schools
M: Municipal schools
S: Subsidized private schools
LC: Large cities
RC: Rest of the country
A: High socioeconomic level
B: Medium socioeconomic level
C: Low socioeconomic level

GRAFIC 1. PER

Performances in the test of 4th. basic grade according to the type of establishment and socieconomic level. 1982.





CONCLUSIONS SURROUNDING THE QUALITY OF EDUCATION

Pedro Lafourcade (*)

During the 1980's, there has been a clear indication in the nations' policies to increase quality education and its programs have been oriented towards this goal. International organizations such as Unesco, OEA, OIE have promoted and supported in the region a variety of actions in that sense. Educators, politicians, specialists have been persistently preoccupied with this problem, noting the most evident deficiencies, its consequences in global society, investigating the agents explaining these deficiencies and searching for alternate solutions.

In order to point the bearing of the statements, its implications and other related aspects visualized within its insertion in the educational field and its complementary evaluation practices, we shall develop certain outstanding introductory considerations in order to identify in the end the guidelines for the search of greater information which shall evidence with a certain accuracy the current state of the quality of education in the nation.

The expression "quality" constitutes in itself a criteria which, such as "efficiency", "effectiveness", "relevance", etc., (1) have been used to evaluate certain characteristics of the proposal, conditions, processes and accomplishments of an educational system. The dictionaries define quality as "that which makes something what it is and which allows for comparison with others of its species as equal, better or worse". In that sense it implies a comparative idea. Therefore, it may be said that certain education is of quality if it includes certain characteristics which allow, as compared to the rest, to assert that it is better than others which do not include said features (or do not include those to the same extent). When in common language we point out that a certain education is of quality (is quality education), we are including an implicit merit judgement which may correspond to the adjective "good". To be exact, we would have to add the category of the value to which it would belong. In the way, a certain thing is either of low, medium or high quality. The expression "excellence" is indicating the highest degree of quality or as superior to anything.

The expression "quality of education", in the frame of the educational systems, allows a variety of interpretations according to the principle being sustained on the intrinsic human condition, on its role whithin its socio-politic reality and on what is assumed as pertinent that the educational institutions provide within each one of the educational levels agreed. So, quality education may mean that which enables the control of a non-interested

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(*) Pedro Lafourcade: International Consultant of the UNDP project "Strengthening of educational planning and decision-making processes".

(1) Benno Sander elaborates a careful analysis on these terms from the point of view of educational administration. Thus, he defines the expression EFFICIENCY, as the real capacity of producing the maximum with the minimum time and energy. Efficient is that which produces the maximum with the minimum waste, expense and effort (Websters), or that which in its acting present an elevated relationship product/expense. The supreme value of efficiency is productivity. EFFECTIVENESS, means the capacity to reach certain results. Effectiveness in educational administration is the behavior criteria measuring the capacity to come up with a solution or desired answer by the members of a certain given formation. It would express the institutional responsibility to provide that which the global society and its multiple cultural diversities are requiring.

knowledge which is manifest in the attainment of scientific or literary culture; that which develops the maximum capacity to generate wealth or turn somebody into a "human resource" enabled to contribute to the productive chain; that which promotes enough spirit of criticism and strengthens the obligation to transform an alienated social reality under a certain imperial power structure which benefits only a few, etc.

The search for a greater enlightment on that which is considered as quality education, is absolutely necessary as a guiding basis for evaluation, be it what is included in the regulating frame (purposes, principles) or that which is proposed in order to obtain it and of the educational products reached. In this way, for example, if it is estimated that, according to a particular (certain) vision of the social reality, its members should be educated to reproduce in essence a certain establishment, without consideration as to how many or who are its beneficiaries, it shall be stated that the education is of quality if its purposes express as clearly as possible this ideology and if the members of this society being so educated reflect, as a result of their learning, their highest agreement with the existing programs, the greatest respect for the existing regulations for it and the maximum agreement for the power structure sustaining it. In this sense, a policy to improve the quality of education shall be oriented to intensify the concepts under that understanding and to provide with the greater excellence in the means necessary to obtain the results which should be appreciated from that point of view. In this frame, a greater emphasis may be suggested in the study of the curricula, a greater proficiency of the docents in the "concepts of science, mathematics or foreign language, a stricter supervisory system for teaching itself, total discipline in the classroom, the application of continuous evaluation to measure the amount of knowledge acquired, etc.

On the other hand, if it is agreed that the members of a certain social formation should be educated to act critically, creatively, engaged in the transformation of a socio-economic order which rarely guarantees equal opportunity and possibilities, then it will be considered that the education is of quality, for example, if its members use their imagination and their acquired capacities in the production of new knowledges for public benefit; if they encourage the recovery of the ability to integrate to society of the marginal sectors; if they contribute to a greater economic productivity of the country for the benefit of all and specially of those that have less; if they cooperate in the creation of new forms of cultural expressions springing from local natural sensitivity basis which will happen in a reality recovered with everybody's effort, etc.

In concurrence with this conception, an improvement policy in the quality shall intend to:

- strengthen greater decision range in the institutions;
- reach greater participation of the society in important viewpoints of their activities;
- emphasize ways of learning leading to the discovery of what is being learned and of its functional use;
- underline the necessity for self criticism among the actors and agents of educational processes as ways to control its deficiencies and define paths for self improvement;
- to spread the news of their educational accomplishments and to discuss the levels reached with members of the community, etc.

According to the above, one of the priority tasks demanded on every project related with the promotion of a quality education is to reach, by means of a wide range debate, certain minimum coincidence on the variety of viewpoints being sustained. Not only on very general matters where in general concurrence is reached, but specially over aspects requiring a greater degree of concretion. This will allow to visualize whether the search of a greater quality will mean to do better of the same or to operate on the basis of a real leap in the quality of what is available.

Said debate must be carried into effect through mechanisms enabling the effective participation of segments of widest range specially of those who have the lesser possibilities of being heard. The development of this debate shall allow to render explicit, the implicit -not always analized critically-which defines the visions anybody may have formulated over which it considers valuable that the educational system may promote. In itself, the methodology of the task shall enable the comprehension as why are certain propositions privileged and others disqualified and to which extent what is being analyzed is supported by a clear ethical point of the social reality in this environment.

A simple observation and comparison between the conditions where educational institutions operating within unfavourable social segments and those that exist among populations with enough means, provide a marked differentiation shown in the quality of the services rendered and, as a consequence, in the quality of the products obtained. Here we would have to anticipate that "excellence without equality will only produce more inequality".

Even if it should be usual to identify quality education with the formation of levels observed among students and graduates of the institutions of the diverse teaching levels, this scope encloses the multiple components integrating the system as well as its global focus.

In this sense it is imperative to consider the quality of the goals, methods, means, teacher's action, institutional attitude. In such cases, the parameters being faced which should determine its quality are selected according to its specific functions and constitution. Thus the quality of the objectives shall be specified in its greater or lesser relationship to its approximation to what constitutes the contents of the socio-political conception which the democratic role of the multiple tides of opinion may have estimated as most valuable to promote in the frame of an educational project with a wide range of social support.

In this way, generally and under the frame of the current opinions in force and of the rules and regulating principles which orient the educational scope in the country, it may be agreed that a quality education is that which enables the maximum development of all those capacities which allow human beings to reach a more scientific vision of reality and strengthen its engagement in critical, responsible, creative and contributing participation in the construction of a social order where everyone may have the possibility and opportunity to reach its fullest achievement.

On other considerations, the quality of every proposition to meet the proposals adopted, shall be evaluated in relationship with the presence and bearing degree of those characteristics representing, among other similar options, the best possible alternatives imagined at the time under the educational purpose sustained. In this way, for example, a methodology which generates in group discussions cognitive-affective interactions nets among students and docents potentially useful for the construction of new meanings, may be estimated as of high quality, or of more clarifying focuses on the way to the layout of a certain problem or more objective presentations over a chosen social object.

The quality of the contents shall be defined as to its greater or lesser relationship with the educational project in order. Therefore, for example, that which has specific meaning for the student from the point of view of providing it with greater self understanding and of its own reality may be estimated as of greater value; that which shall provide him with better tools to operate properly in a world needing its contribution: that which provides him with a wider knowledge of its multiple possibilities and that which may open new perspectives of fulfillment, etc.

The quality of the teachers shall be appreciated, similarly, confronting its practice and the educational theory supporting it with the requirements of the educational objective being promoted. Thus, for example, in connection with what was described above as quality education, the docent required would be that which, among others;

- would have enough capacity to self evaluate as a routine its own practices and the real projection which constitutes its basis;
- would have elaborated a solid engagement with the values founding the project being promoted;
- would have enough ability to explore, through a variety of resources, its own internal and external reality within the institution; that which would raise the best questioning its action and would find the most valid and useful answers which would allow it to operate in the full knowledge of that which is happening within its environment and the extent and limitations of its action;
- that who would have been associated with learning-teaching patterns created as necessary conditions for the success of the educational projects aim which are tried to be accomplished, etc.

The possibility to avail of a certain more precise idea on which is the quality of the education being provided at a school, a zone, region, province, or in general the school system, is obviously tied with effective existing investigation and evaluation programs which would have been incorporated to the organization, as integrated parts to its operation.

Unfortunately, the above record corresponds to a more development phase of the practice of educational guidance, a practice which usually lacks of any expression within the denominated educational systems.

Generally, we would have to admit that there are very few which may rely on an integrated and wholesome information system allowing for the continuous control of the administration of its activity and a greater forecasting for its efforts. In this way, any trustworthy information on this subject may only be the product of an isolated activity impelled by external and financial support, or under a more limited frame, by the effort investigation centers interested in the problem.

In a more informal and isolated way, the information may be originated from educators, politicians, critical analysts, journalists, etc., whose comments, points of view and evaluations are distributed through different communication channels. Even if certain of these aspects individualize the most relevant deficits observed, overgeneralization is not rare within the system, the personal visualization of problems and the scarcity of interpretations which rely on the exact origin of the existing socio-economic order and its limited possibilities as an option, to guarentee for everybody, and in reasonable terms of time an education of the highest quality. Notwithstanding, the knowledge from the contents and of the persons issuing said observations have a special meaning when analyzing the extent of the problem.

In consideration with the above noted, it is important to design the outlines of an action orienting the search of information tied to this subject matter. In that sense, it would be interesting to find out whether the educational system:

- Has enough and reliable information on:
  - The accomplishment levels that, related to important aspects of the formation, the members of the diverse centers soon to graduate of a certain educational level are reaching and, should this not be happening, which is the disposition and feasibility to integrate this task to the action itself.
  - The educational levels which in a continuous strata of teaching in a certain block, would be observed by the members of a center and on which a certain decision has been reached according to an evaluation.
  - The quality of the conditions (substructure, means, docent action, etc.) which enable the accomplishment of the objectives of the educational project being promoted.
  - The observations by the docents of a certain level in relationship with the formation and preparation by the pupils showing the level preceding them and the results obtained according to the data being collected.
  - The employers, agents receiving the services of the graduates of a certain level or teaching system, opinion which would qualify in that sense and the performance of the system in consideration to said information.
  - The differences in the formation and preparation observed by the members of a certain teaching level on historical points of interests, taken as a comparative reference.

- Would have technical units:
  - Which are in charge of providing the indicated information in the distinct cases above, process it, organize it and distribute it for its analysis, discussion and decision making.

- Promote and support economically:
  - Investigations, essays, experiences, in the centers as well as in the intermediate organizations and of the leadership, conductive to the increasing knowledge on the warp of action which would sensibly expand the quality of education and demonstrate that such a growth is really happening in the levels which may possibly justify such an expansion.

- As a complement, it would be important to learn:
  - How much has been investigated in the country on facts determining the quality and on objectives proposed to indicate precisely which is an education of quality and how to foster its accomplishment.

- And besides:
  - Whether there is a profound and sustained social preoccupation for the direction and quality of education, shown in a certain practical way, in order to be able to view the structure and operation of the system to appropriate whatever is necessary to allow the means to reach an agreement of the proposed objectives within a frame of open debate, concurrently oriented in order to reach the maximun democratization of the educational excellence.

Information and quality of the performances

The preoccupation to obtain information on the coverage, promotion, scattering, dropping-out, annual growth enrolment, cost per pupil, demand projection, etc., in order to support the educational policies, enabled -in the majority of the managing institutions of this area- the organization of permanent technical groups and a certain development of investigation methodologies and information processing, related centrally to the quantitative. A minimum standardization of the procedures above generated the possibility of comparing the data and its interpretation, within usually acceptable defined parameters. Currently, the incorporation of computerized system and the proccesing of increasingly more complex programs, has seldom met any observation (excepting those derived from its possible costs) in view of the already generalized and habitual practice of this type of activity.

On the other hand, the preoccupation to find out which are the accomplishments being obtained by the system in the formation of members of the different teaching level groups and in the manner that said accomplishments respond to the proposed objectives, has still not reached enough standing in order to promote decision making within the management ranks. Nevertheless, it is of common knowledge that not to count with a minimum but at least trustworthy information on this subject, is a very unjustified deficiency in view of the importance of the administration of a satisfying system to its highest objective.

The introduction of evaluation programs of the pupils accomplishments who may have reached stages estimated as interesting in this advancement through the different education levels, would complement the scene with information gathered necessary to decide on important policies facing this social problem bearing on its fulfilment.

Which would certain major queries of greater interest to be unveiled in its real importance, through the application of the above mentioned program be? Maybe they would be the following:

To which extent do the accomplishments of the pupils, soon to pass from a determined education level, reasonably reach those expected from them or not?

The inquiries by the system on this subject, starting 1983, inform that only one investigation carried away on the accomplishments obtained in their curricular objectives by the pupils of a certain education level, was undertaken by the initiative of the Secretary of Education of the Buenos Aires Municipality (2) in schools belonging to said jurisdiction. Even if the central objective was directed towards the search of information in order to support a critical design of the 1981 curricula, it is important to point out to the manner in which it was handled it represents a significative background to the idea of setting out to an effort the kind as a systematic and generalized task at the different education levels

According to the results obtained, and independently from the critical analysis covered therein (unsuitableness of certain inclusions, absence of certain relevant contents, questionable theoretical thesis, etc.) it is certain that the observation of accomplishment levels in a certain group of members soon to pass from 7th grade are framed within the patterns observed in other places (latitudes). In this way, for example in Language, the average of the tested groups obtained 46,44% of correct answers; in Social Sciences 41,95%; in Mathematics 41,70% and in Natural Sciences 40,92%. Similar figures have been informed by other countries. The Secretary for Public Education of Mexico, through their General Administration for Certification and Credits, has been specially interested in learning the degree in which the objectives are obtained. Tests applied in primary, in the areas of Spanish, Mathematics, Social and Natural Sciences demonstrated that the 90% of the members examined only answered the half questions correctly. (3)

In Costa Rica, in similar testings to groups soon to pass from grade 6th in 53 schools of semi-rural populations, even less percentages were observed (4).

Currently, the national evaluation in that country provided by the Research Institute for the Improvement of Education of Costa Rica in 1986 for the 6th grade of Basic School, the 9th grade of General Education and the 11th grade of the diversified education, revealed that the averages of correct answers for Mathematics and Spanish of the 39.485 pupils tested fluctuated between 42 and 52% (5).

The figures obtained would be indicative that the accomplishments do not reasonably reach the expectancy. Moreso, the efforts undertaken have scarcely allowed the attainment of half or less than half of that thought to be feasible.

Will the Argentinian school system disclose similar accomplishment levels? Will it matter that such a disclosure is taken or not into account by the country's press?

To what extent is the democratization principle supported by the current political project, in the facts, in an equal distribution of knowledge among the members springing from different social and geographical areas, etc?

Different studies carried away in various countries have unfolded marked differences in the accomplishments according to the geographical situation of the educational establishments and to the social structure of the students. Therefore, for example in Mexico, when the academic standing of students from Communitary Courses finishing their 4th grade of basic schooling was compared with students from urban morning primary schools of the Federal District, it was observed that, as an average these were superiors to those above mentioned in a 15%, in general and in each one of the areas (6)

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(2) MUNICIPALIDAD DE BUENOS AIRES. The profile of learning according to the accomplishment of the curricular objectives (in the areas of Language, Mathematics, Social Studies and Natural Sciences), Project 3, Year 1984-1985.

(3) CAMARA, Gabriel: Schock and relevance of Basic Education, Secretaría de Educación Pública, 1953, p .25.

(4) CEMIE: Evaluative research of the accomplishments of the educational system, San José, Costa Rica, 1983.

(5) UNIVERSIDAD DE COSTA RICA: Results from the national evaluation test for minimum knowledge of: mathematics and Spanish, Preliminary Report, San José, Costa Rica, 1987.

In the above mentioned Costa Rica report, the national evaluation tests in 1986 show even greater differences in certain curricular areas among the schools of the capital city (and important urban centers) and marginal and rural zones. (7)

As to performance tied to the social origin and material living conditions, there are a number of studies which show a close realtionship. These arrive to the conclusion that "the children which are able to complete their basic schooling in establishments located in marginal areas, leave the school with a significantly deficient handling of basic cultural instruments. The same amount of years of study, produces a very different quality student according to the child's social origin and the teaching conditions at the school".(8)

Facing what we have seen above, which is the extension of the problem in the country and is there conscience among the docents in relationship to the produced effects when a greater equality in the results of their teaching activity is not carried away?

Have the accomplishments obtained by students from different areas included in the curricular designs reached a similar development level when compared to the integration principle of their formation?

The results obtained from evaluations undertaken at a certain scale, reveal that the accomplishments in the different areas of studies of the plan show clear differences. For example, in the evaluation process undertaken in Costa Rica, with help from the OAS, revealed very low values in the area of Sciences as compared to the other values obtained. The national average of the tests applied recently in said country show that in the 11th year the success level in Spanish is 41,4% and 22,9% for the area of Mathematics.

Investigations undertaken in the first case allowed to find out that the curricular considerations effected among the relationship of the diverse areas, are not really carried away. In the primary schools, hours are cut off from the fields of Sciences, Plastic Arts and Aesthetic Education in the benefit of the fields of Language and Mathematics. If this is added to the scarce preparation of the docents in those fields and the usual deficit of the main materials, the abysmal discrepancy existing between the objectives which, connected to said areas, the description of the curricula received by the centers and the results observed in the scientific, aesthetic or practical formation of the students finalizing said learning level, may appear very understandable.

Now. Does the above indicated represent a problem only to be considered in certain centers or does it constitute a trend of greater proportion? How much does the administration care, in the different localities, for information on this matter?

The quality and social meaning of the products worked out by the students throughout time is a consequence on the multiple factors, among which, the quality of the objectives guiding the actions and the operating conditions for their accomplishment. Could it be certain that said quality and significance characterize the aims reached by the pupils in their formation?

Having developed, as a constant and effective incidence by the docents who integrated efforts throughout a period of time, a certain capacity to explain as objectively as possible the various practices, uses and habits of the social environment; or having acquired a greater ability to organize a different counterstatements when facing new situations, or increasing the investigating spirit to explore with different intellectual tools certain aspects of knowledge and human behaviour; or by making a functional use of knowledge when facing situations requiring a different approach, seem to be in general, products of a highest quality and social significance, than to repeat by heart the coastal accidents, remember the happenings during a certain governing period of a kingdom or to recite without any help the paradigm of any verb tense.

Even if over the above there may be existing in theory a high coincidence, practically, when there is not enough knowledge in order to select and orient activities conductive to the attainment of products of quality, the contents of the objectives proposed referring to the same turn into plain rhetoric. In this way, in the Language evaluation accomplished by the technical teams of the Secretary of Education of the Buenos Aires Municipality, objectives such as "Express your maximum creative capacity in the writing of speeches" and, in general, those that had creative contents and originality were reached by a relative minority which, inclusively, was even more reduced in 7th grade. The same happened in certain Natural Sciences objectives, such as "Identify problems during the development of an experiment" or "Interpret vital functions as the processes maintaining the balance of the body". Summarizing, there are several doubts that the educational institutions may have emphasized the accomplishment of objectives proposed for a formation considered of high quality, but, how to secure information if there is no national evaluation program that may allow the indication of the problem within an acceptable and trustworthy frame?

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(6) CAMARA, Gabriel: Op. Cit., page 26

(7) CARLOS BORSOTTI provides certain explanations to the usual problems of low performance (as compared to that obtained in urban establishments) of the pupils from the rural zones in Latin America. See Sociedad rural, educación y escuela en América Latina, Kapelusz, UNESCO-CEPAL-PNUD, 1984, chapter 1, 2nd part; chapter 4, pages 98 and following.

(8) TEDESCO Juan Carlos y Rodrigo Parra: "Marginalidad urbana y educación formal", en La Educación popular en América Latina, Kapelusz, 1984, page 96.

Could it be assumed, considering as a basis a tangible information, that, just as it has happened in certain countries, the pupil's accomplishments in the different learning levels have declined as compared to the past?

A well known report produced a few years ago in U.S.A. by a National Commission of Excellence in Education (9) stated, among other things, that: the average performance of the High School students in most of standardize tests is now lower than 26 years ago; that in the performance tests taken at "colleges" reveal a constant drop in the last years in areas such as Physics and English; that the proportion of students demonstrating a superior performance in aptitude tests has fallen dramatically; that there was a considerable fall in Sciences among 17 years old youngsters starting from 1967; and that the university graduate students have also lowered their average performance in the tests (10).

Concerning the above, would it be possible to believe that something similar has happened in the country? Or maybe in the last three years the levels of accomplishment of the primary and secondary school students have risen considerably? How is it possible to test that which is usually quoted as "the students from older times knew more than the current ones"? It is evident that without tools created to elaborate on the kind of information required, it is absolutely impossible to prove the truthfulness of said statements and what is even more important, to investigate on the reasoning of the possible quality downfall and consequently decide on the right course of action.

During these years, enormous efforts are being spent in the provinces in order to give a new guidance to educational services in the frame of a democratic political project. Teacher training, curricular revisions and changes, administrative reorganization, etc.,have constituted certain of the decisions faced by the administrators and members of the different instances involved in the changing process. In the view, which are the effects noticed in relationship with the students performance? Is there a greater inclination towards studying or a more intense enjoyment of the school experience lived?

If we do not have a trustworthy evaluation system which allows to appreciate the effects of the actions in the results obtained in the education of the pupils (be it through evaluation synthesis and/or testing situations included in the key points of the advancement process), it will be impossible to truly judge on the effectiveness of the efforts realized. A reordering and/or creation of the necessary conditions to guarantee reasonable accomplishment levels, must submit itself to the testing of its effectiveness through methodologies allowing to demonstrate that in effect, the results justify the economic and human effort required.

If this administrative control is not carried out, supporting that the type of action will in itself assure the expected change, it may very well happen that the innovation suggested turns out to be dynamic but essentially harmless (neutral) or even so, may generate undesirable collateral effects.

Above the considerations hereby presented, which other effects may the knowledge of the performance observed, within a frame of extensive cooperation among educational institutions and the community as a whole in itself, among a certain institution, zone, region, province or country?

If we admit that the accomplishments reached by the educational institutions are a consequence of a number of agents, part of which are transcendental, the most generalized reaction facing its possible deficiencies would be to avoid in first place, to search and define the guilty elements responsible for them, but to provide an immediate agreement basis in order to integrate efforts to gradually transform the conditions generating them.

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(9) NATIONAL COMMISSION OF EXCELLENCE IN EDUCATION: A nation at risk: the imperative for educational reform, Washington D.C. Government Printing Office, 1983.

(10) In opposition to this decline, intelligence tests usually applied in Europe and the United States have shown an increase in the intellectual capacity in the last 50 years, time during which there has been plenty of investigation. (TORSTEN HUSEN: School on debate. Problems and future, Narcea, Madrid, 1981, page 100)

Maybe that which is most important, is how to move the unused capacity and the insufficient pledge by all who, in any way, are participants of the educational chain: institutions, directing and intermediate organizations, local government, etc.

A study developed by all may reveal that certain deficiencies were produced due to lack of economic resources, others due to lack of updated knowledge or due to resistance related to the same organization and administration and last but not least, those that even if everyone above is complied with, have been the result of the lack of motivation and pledge to the system of the agents involved.

It is underlined, once more: If the information obtained and publicized is able to mobilize, when facing deficiencies, an active methodology with ample participation, guided towards obtaining the capacity and accomplishment of the necessary pledge to overcome them, then the effort demanding the creation and application of an evaluation program of the academic performances, its quality levels and social relevance will be totally justified. The efficiency of said methodology shall be confirming and/or adjusting through its administration during the process itself. New evaluations of the products from the formation of new groups complement the information and shall indicate the extent of the expected effects.

Requirements for the Improvement of the quality of education

As the quality of education turns to be a problem absorbing to the same extent, all the areas involved, and presuming (some confirmed) that the formation levels reached by members of different graduations, do not represent, as related to the years of study and with what is required from a transformation process and changes in the social and economic conditions of the country, a basis strong enough for those members to exert an active and directive, creative, critical and committed activity with said program, it is estimated that it is convenient that the country's Ministry of Education studies the possibility of generating a Program for the improvement in the Quality of Education as a realization of one of its stated policies.

Facing such a tremendous challenge, which would be the most relevant aspects taken into consideration in its making? These are estimated to be as follows:

- The statement of clear objectives proposed and their extent of a job undertaken as a joint effort by members of MED and representatives of the leading educational authorities of the Estados Provinciales.
- The selection of a series of general criteria guiding towards the agreement on the group of basic formative aspects considered as basic for the profiles of those pupils graduating from the different learning levels and, complementarily, the joint determination of the evaluation procedures which provide with a comparable, valid and trustworthy information on the performances observed in those aspects.
- A step-by-step analysis with specific objectives to be carried away within a certain period of time enough to appreciate, throughout the advances of the different groups, the impact determining the actions towards the generation of a sensible amount of accomplishments.
- Certain guidelines on the way to obtain the maximum, and by means of information exchange and circulation of among specialized personnel, out of the experiences being conducted throughout the country in order to transform education from a point of view of quality and social significance.
- The way of integrating the Program, to the Institutes of Teacher Education, to the Education Departments of the National Universities, as a means of intensifying investigation and to contribute with its specialized personnel, to concrete and make the necessary claims to a reality in the need of its active intervention.
- The cost study, the financing ways and the compensation mechanisms established when the differences in the schooling performances of unfavorable economical areas may not be covered with the usual budget of the Estados Provinciales.
- The agreements among the ways to maintain public opinion informed on the results being observed, be it in the increase of the conditions of the system being established for the accomplishment of its proposed objectives, as well as in an increase in the quality of the products fostered by said conditions. The joint effort for a Program for the Improvement of the Quality of Education must be enclosed within clearly established frames, which allow for a certain agreed upon profile. The lines conductive to said agreement could be:
- The quality of education within a project which to a greater extent promotes a democratic public order, is a product of a gathering of elements coming from the system as well as from outside. To secure a high quality education and one of social significance is a problem which concerns the global society and, therefore, any action organized in that sense must rely on a decisive and continuous participation from all the areas, if it expects to obtain some lasting success.
- The search of excellence in education without social equality results in a greater

inequality. In that sense, the Program shall underline the need to generate whatever is needed to act over the elements procuring it and whereabouts timely action is necessary to diminish its effects.

- When facing the guidelines of the educational project being constructed, the quality of the yield shall be made up of a complex of circumstantial elements, but the possibility of reaching the highest accomplishments fundamentally relies in the intensity of the strength of the pledged vowed by everyone involved, when carrying on with the process, the material and legal conditions allowing the members of the institutions to operate within the frame of their reality as integrated and as imaginatively as possible, free from restrictions and controls eroding professional dignity and socially responsible of the results and effects of their commitment.
- The insertion of the Program, even if it has a starting point the reality of the system as conformed, shall be specially guided to critically check the guideline from which its organization, administration, and current behaviour is making sense, which, due to its multiple mistakes and little effectiveness to guarantee reasonable yielding levels, allow for the assertion that it is doubtful to reach better quality products by doing the same in a better way.
- The methodology used to find out the accomplishments that the members of the different groups may have reached as a product of this program throughout each learning level, shall turn into a coherent decision to the origin of what may have been estimated as quality learning. Therefore, for example, if within the performance point of view, it is understood that the ability to develop functionally what has been learned in the most diverse situations, as well as how certain knowledge concepts as on everyday reality, the system chosen to evaluate said accomplishments, in order to be considered valid, must adjust to the concept implied. (11)
- In our societies, the activating component that the young generations may feel a need to participate in a constant search of quality and of the effect of what they are learning, on top of what the educational system may be able to accomplish in said direction (social significance of the contents being offered, selection of challenging learning activities, capable and involved docents, etc.) is grouped around the promise representing the occupational spectrum generated by the country and the possibilities, that part of what is learned constitutes an adequate basis to figure study-work options which allow, of the right moment the best occupational and social opportunity as possible. Among other things the unemployment rates in the age groups 17-25 years old are high and this knowledge, shall go against it; that the occupational requirements do not need their efforts of learning the best during so many years; that in order to obtain the economic success reached by each one, what is studied is not very useful; and that a very high number of university graduates may spend several years without work in their trade due to market saturation and that the salary conditions will not allow anything else but the minimum survival earnings.
  From this perspective, the proposed objective, relies in the conviction that the political management of the country is straightening whatever is necessary for the next generations to have real participation concerning their formation, among the multiple opportunities being provided by the different economic activity areas.

The notes hereby try to communicate that there is a need to whoever acts within this Program to take into consideration the political incidence determining it and once its possible application is considered, to continuously check by facing a reference frame, the dynamic maintenance of its greater direction lines.

The above reflections shall require greater extension and development.

Evaluation Methodology

The quality of the purposes related with the preparation and training of each group in the different levels of teaching, constitutes the initial evaluation activity which will help to select the best options to attain its success. The control and managament process as a whole and the works linked with a continuous evaluation, altogether with the ones performed in the matters considered of interest within each level and with the one carried out at the end of the same ones, represent the ways of supplying information about the achievement quality attained by the students and, in an indirect way the effectiveness and efficiency of what has been carried out. Starting from the historic act which signed the birth of a democratization process and mobilization of the country towards a better future, the majority of the provincial states and the country's Education Ministry generally agreed, in the declaration content which explains such philosophy. In such sense, the intention is to carry out the necessary actions so that the consecutive group members have the real opportunity throughout their formal school years to attain

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(11) In this sense, the adoption of a methodology based exclusively in pencil tests, among others, those known as multiple choice, maybe does not represent the most adequate guideline. Even if their usage is extended in countries such as the United States, Colombia, Mexico and Costa Rica, it has meant, securing information comparable to the students performance in the primary and secondary levels at reasonable costs, the criticism related to the artificiality of the situation and the doubts on the validity of the information as related to the capacity of the individuals to construct their own answer facing situations requiring them (which is typycal), have been underlined by different sources. (See, Strenio, Andrew J. Jr.: The Testing Trap, Rawson Wade Publishers, Inc., N. York, 1981)

- Enough awareness of the need and value of their being conscience protagonists who will contribute in the construction of a social reality based in solidarity, and respecting all idea and action which may contribute to the most complete fulfilment of all and of each one.
- To increase their interest and persistence in constantly learning of the human experience and to continously review the own convictions and interpretations of reality, to assure its most scientific view.
- To strengthen their self-esteem, identity, autonomy sense and control of their own life definition and of their human realization.
- To increase their attitude in order to be receptive and flexible to others points of view.
- An adequate critical capacity and wanting to use it and a constant improvement.
- The most profound internalization of creativeness value and social meaning, as a very valuable component of the human nature and to strengthen its need of expression as a part of their existence.
- Sufficient knowledge and understanding of the personal-social meaning of the productive activities and an initial preparation to carry them out, and the necessary foundations which will contribute to take mature decisions.
- A clear critical comprehension of their local, regional and national reality in relation with its genesis and historical development; its present demonstration and its future perspectives; to steady its participation in the continuous recreation of their social and cultural values, and the change of all which could be an obstacle to democratizing human beings'fulfilment possibilities and opportunities.

- To experience a fruitful and justifying learning in the different levels of the scientific-technological, historic-social-cultural, linguistic, communications, logical-mathematical, aesthetic, which would have explained and made clear diverse questionings that arised. To generate new ones and to develop sufficient abilities to apply or to plan methodologies that will facilitate the income, prosecution and new information production.

As it has already been emphasized, the system's responsibility as a whole and also of the other petitions which on one way or another get involved in its understanding, should not end in the effort to be done to promote what is implied in the purposes aforementioned but, also to find out the level proportion of reasonable and acceptable attainments that can be obtained in each case and in relation to the different groups. (Which, at the same time will act as an indicator of the quality attempted to obtain).

The possibility of planning a performance evaluation programme which will furnish comparable information on what is occurring in the different regions of the country, is determined by the ample questioning range which arised, rather than by answer which could be specified.

One of the first questions that arises within this country problematic, is related with the identification of the education aspects which should be considered in an evaluation programme applicable to vast educational sectors. The answer will be the result of a common analysis carried out by each provincial State delegate, whom will get to an agreement basing on criterions previously debated and established.

Observant to what is noticed in the purposes of the diverse elaborated curriculums designs, and the proposal already set forth in relation with each one, one of the many alternative approach could consist on determining all the educational aspects considered outstanding to take into account according the teaching level in which the information is obtained. Thus, for example, it is possible that on finishing the primary and/or secondary education to find out:

- The level of knowledges that the group members would have attained to handle with certain fluency and suitability. Also, the capacity to reconstruct information with certain ease according their needs.
- The capacity attained to interpret new information, to perform critical analysis and to integrate the information from the different fields.
- The capacity developed to create and to put into practice strategies directed to different purposes (to research a reality, to elaborate a product, to explore if some hypothesis are reasonable, etc).
- The clear disposition in the use of regular information acquired in the different areas regarding the daily life needs.

- The disposition to an habitual use of forms and styles of adequate thoughts to what typifies the plan's knowledge areas.
- The interest developed as a consequence of the exposure to the different knowledge and action spheres.
- The development of certain critical conscience related to the social meaning of the knowledge developed in the different acquaintance fields and its distribution and uses.
- The social and institutional insertion capacity developed (in what measure has it create its chief role necessity in a social reality that needs of its critical, creative and solidary contribution to consolidate the democratization process, which will mean a real and fair power distribution. Also the possibility and opportunity of personal realization, of each and everyone).

In synthesis, all the discrimination carried out is referred to four large resulting groups;

- The efficiency noticed in the different areas of the plan.
- Apprenticeship familiarization levels, such as the ones reflected in its reality views and of its practice.
- Generated interests.
- Attainment levels in aspects linked with its social and institutional insertion.

The characteristics of the procedure products exceed in as much as the conventional ways of finding out its existence, methodologies typified by the traditional pencil and paper tests in which, who gives an answer should mark the correct answer or the most correct. Naturally, at this point the most serious problem arises, since the alternative that moves away from what has been conventionally used in some countries, may turn out to be more expensive and is more exposed to cuts in its reports. Nevertheless, this should not impede the working out and testing new proposals. In relation with this subject it might be interesting to pose some appreciations. First of all, and basing on a similar discrimination foundation to the one included, it is necessary to define with great accuracy and in relation with an exhaustive study of the explicit or implicit reports, the education purposes in each level-exposed in the documentation in force-what products should have been attained on concluding a cycle of the primary or secondary studies (its validity according to the promoted educational project).

Second, to solve the best form that would show the possession of the competence to be evaluated. It will be necessary to decide whether the evaluation programme to be applied will only have information to be registered by members appointed to this end in specially outlined acts, or if it will be a complement of data obtained by the teachers, students or others members who will inform. Complementarily, should the qualification be done in the existing or to be constituted evaluation unities in the technical organisms of the system, or according to certain characteristics of the answers given, members of the educational institutions will be appointed in order to carry out such work.

We believe that an evaluation programme should integrate multiple forms to obtain what is wanted and that its feasibility onerousity and apparent cuts, can be controlled through applications which may be biannuals or triannuals and through crossed controls to guarantee a larger confidence in the information. In such sense, certain data may arise from sampling situation created with that purpose which would be observed and qualified by members of the external centres. Others to answers given in questionnaires or to interviews in charge of groups of a similar constitution. On the other hand, information registers linked mostly to disposition with the aim of integrating efforts with others to attain a purpose, the aid impulse to whom may need it, also the impulse to persist in the solution search of problematic situations which may arise, etc. will be carried out by a teaching staff in periods of time to be determined and with a previous assistance. Inasmuch as the instructions to direct the students' activities in the tests will generally mean the possibility that the persons who are interested will build the answer rather than select it (save such cases that it would mean a natural way of using what has been learned) and they will also have to precise how to carry it out, adjusting them to criterion that will show the quality of the subjects learned. The basic principle to be taken into account will be to select, according to the product nature to which its achievement level is attempted to find out, the way that it will be interpreted in the most valid form.

If according to the education concept that is attempted to be carried out some educational activities turn out to be priviledged, in which the student has to build the answer, the criterion which will direct the analysis, the indicators and the determinant norms that the criterion used was the correct one, all these will represent an important matter to be taken into account. On this very point the term criterion should be understood as a feature, quality or condition which distiguishes to a given reference and that is taken into account to analyse it, to classify it or to qualify it. Terms such as effectiveness, efficiency, efficacy, coherence, organization, sufficiency, originality, relevance, etc. represent characteristics, properties or qualities which are usually taken as criterion to express judgements about ideas, actions, objects. When a composition or the form in which someone does an experiment or writes or exposes about a subject are evaluated, it is commonly taken into account whether something considered indispensable to be present is or not, in case that it is present it should be taken into account, also in which way or according to what pattern it shows (quality) and, in general to complete the judgement, how much of what is required, adjusted to which norm, are observed in what was elaborated (quantity). The underlined terms synthesize subjects of interest linked with the evaluation criterion which are important to elucidate. Thus, in the test situations it will be necessary to determine the criterion to be taken into account. In an arithmetic problem, it might be demanded: a reasoning adaptation (it doesn't matter the course that the student chooses); operation accuracy and specific knowledge of the comprised thematic (percentage, fractions, etc). In Natural Science, in which in front of a group of materials and apparatus is required that the student thinks up a determined lapse of time, one or more experiences that will allow him to know certain properties of elements which will be given to him, maybe the criterion selected will be: versatility and reasoning of the attempts, relevance of the materials and devices chosen, etc. Apart from this more analytic approach, in many cases it will be necessary to use optics which will allow to appreciate aspects which can only be perceived from the totality of the effort performed. Thus, a composition may have a deficit relating spelling, not adequated terms, etc., but in general may represent a very original point of view about a particular reference.

The criterion mean to fix the attention on indicators which will disclose what expresses its content. At the same time, the measure of what has been carried out or some of its aspects, includes the established criterion. The guarantee of a greater coincidence in the judgement, will be supported by a previous description, sufficiently clear about the way in which each criterion should be considered included. Such description will be the result of agreements among whom develop the diverses curricula areas and the teams that will plan the programme. The marks assigned to each case will also represent a task to be elucidated, thus as the minimum required to consider that the knowledge in its entirety that constitutes the components of a test situation can be appreciated as acquired or not acquired in its functional use. In the same way, inasmuch as the number and types of integrated components to the test which its positive qualification will supply information relating the command level that the students notice in relevant sectors of their study plan. (The pointed out ideas prevent against all kinds of tests which on including item samples of an area subject, do not provide a global idea of its knwoledge from a coherent and sufficiently embracing of diverse implied operation perspective). (12)

The general focus, which should have priority inasmuch as the type of information that an evaluation programme will supply, on being applied to members of a group nearly to graduate from a cycle or from a determined education level, is to obtain the most clear vision possible of the all learned capacities, and relevant acquired functional use of what is contained in the curricula areas which were taken as analysis and reflection reference (body of knowledge already systematized by the learning advance) also in the reality sphere (body of knowledge discovered by students in their surroundings and interpreted and systematized by themselves). In such sense, the test would not require information fragments selected of previous courses or of the latter one, but the contribution of the pertinent knowledge, reactualized and recovered during its learning, which the student itself should select and integrate to solve situations where he will have to participate.

Once covered the elaboration stage, the adjustments of the produced materials will be solved through applying the same ones to different samples of students which its representativeness, in relation with the population-object, shall be established in its opportunity. At this stage it shall be very important to include a variety of tests equivalent inasmuch as the obtained information (though they might include the variants demanded by the diverse geographic, cultural forms.

A codification system created for such purpose, will facilitate the latest procedure in computational programms foreseen for such case and to make possible diverse crosses in relation to data coming from the marks that show the institutional capacity of attainment or of other variables considered interesting to be included.

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(12) It will be interesting to consult:

ENTEL ALICIA: Contributions for a new conceptualization and measurement of school knowledge, FLACSO 1985 (mimeographed version).

MUNICIPALIDAD DE BUENOS AIRES, SECRETARY OF EDUCATION: Profile of learning according to the accomplishment of the curricular objectives, Project 3 1984-1985.

CEMIE-OEA: Evaluation materials produced for the evaluative research project of accomplishments of educational systems (PIELSE) 1982-1985.

Evaluation procedures

One of the first tasks to perform is the search of the major explicit in the best way the purposes which define and direct the educational work. It is underlined that such formulation constitutes a really meaningful activity. Such clear explanations shall be the axis of concrete programmes to be faced by all the instances which integrate the service.

In such sense, it could be stated that an education system attains adequated levels of quality, effectiveness, efficiency and social meaning if:

- The purposes and principles that direct their actions constitute the best expression of what is contained in the educational project agreed to promote, and it what is yielded in each one of the multiple aspects to be taken into account in the members formation of each group, is coherent with the same ones (purposes, plans and study programms)
- It attains to create conditions in order that all its members of the group of age that due to legal dispositions should perform their basic, common, obligatory education are incorporated in its action sphere. (covering)
- It attains that all, or the great majority of members of the different groups of age who have joined the system, complete satisfactorily what is required by the corresponding level or education modality (retention)
- It guarantees that the members of each of the diverse levels and education form achieve, in relation with its education, the most elevated attainments possible within the agreed quality and social meaning criteria.
- It attains the most suitable among the ages of the members of each group and its normal location of its continuous advance.
- It attains that a greater amount of the common teaching basic level graduated enters and finishes with success the next level an at the same time assures the most ample access democratization of such graduates to the vast educational offer range of the third level.
- It facilitates the most ample spectrum of study opportunities at a superior teaching level, which will take into account the occupational absorption needs that the country's project would require and the conditions which complementarily were generated to stimulate the graduates'initiative in opening new lines of action.
- It makes feasible to all inhabitants of the country the permanent opportunity to enlarge, to update, and to restart or to decide new education openings which will allow to attain and enjoy a better life quality and a larger contribution to the society project which is attempted to be attained, (permanent education).
- It continuously assures within its action sphere -and requires it from the other sectors- the creation and maintenance of the necessary conditions that will make feasible its purposes attainment in the most elevated quality levels possible.
- It uses the most pertinent and timely options to compensate the deficit which may arise in its achievements, which can be attributed to internal or external factors.
- It observes the fulfilment of elemental reasoning and efficiency principles inasmuch as the resources used, to the organization forms which may be adopted, and to the execution and control of the specific actions to be performed (institutional selfevaluation, integrated information system, ...)
- It has available (due to many sensor variety existence which supply the updated information of what is going on in and out of its borders) a certain capacity of anticipating to diverse situations, in front of which it elaborates in advance adequate replies.

In the aforesaid idea, the mentioned featuring shows that the posed purposes do not observe its rhetorical function which is typical of organization models and conduction styles created and developed for a group of tasks, which are nearer to the administration of the existing than to the concretion search of their proposals and to the way of demonstrating that it is occuring. The noted expressions represent the basis of objectives as a whole which include almost the totality of what should constitute the responsibility of a political-social system mediated by the established educational organization. From the perspective of such responsibility those aims should be attained and all noticed deficit should be submitted to a careful analysis to determine the measure in which such responsibility, on the part of some requests or of the in force political project, has not been sufficiently exercised.

A second task in relation with the action of such demands, always in the frame of the philosophical education project that is attempted to build and develop, is to make precise in an emphatic way the necessary condition required by the different demands to obtain products of good quality. Thus, for example:

What does it characterize an education centre which attempts to maintain a high level of quality in its services?

In relation with the teaching staff:

- The excellent academic-professional preparation that they have and the continuous updating and training which they attempt.
- The compromise and ability with which they face and develop their activities with students in the frame of the educational project that is intended to carry out.
- The compromise and ability that they show in the fulfilment of all the activities that would have contributed to precise the institutional objectives achievement.

In relation with the conduction activities:

- The existence of a favourable institutional climate to develop creativeness, to criticims and, in general, to the development of the most highest compromise to attain the purposes which define the job of all its members.
- The successful use of mechanisms and methodologies which assure the most ample and productive participation in the decision of all the social persons involved in its action.
- The capacity to clearly formulate the institutional purposes in accordance with the in force education project and to generate the methodology which will guarantee reasonable levels of concretion.
- The capacity of supplying in practice the maximum coherence and organization to the different activities that would be carried out, especially concerning the advance of each group throughout time.

In relation with the organization:

- The existence of favourable atmospheres to modalities of the students' job more centered in its habitual protagonism and where they can find enough bibliographic, didactic etc. material to perform the learning activities which had been agreed.
- The availability of specific areas in the centre or in the middle, where the students carry out practices linked with study plan content required.
- A schedule organization which will allow the students, during the lapses established, the meaningful and challenging activity performance of their resolution capacities.
- A sufficient, permanent and updated staff of bibliographic and didactic material, in accordance with the philosophy of the education project which is promoted and with an useful handling capacity of its users.
- The adequate functioning of institutional mechanisms that will favour, in the members of each group a continuous advance and the possibility of integrating and consolidating information that will provide sense and functional character to what is learned in the different years and areas of knowledge.
- The existence of mechanisms which compensate the negative effects that use to arise in the students due to personnel changes or its members absence.
- Having an effective and efficient information system, integrated and integral, which facilitates the continuous evaluation and the taking of decisions processes.
- To hold work organization modality of the staff and non staff personnel that facilitates, within the lapse legally established, the coverage of several tasks related with the institution's purposes.
- The maintenance of an adequate numerical relation students/teachers.
- The capacity to give structure a practical and reliable institutional self evaluation system which will allow to exercise selfcriticism, to delimit responsibilities in relation with the noticed attainment levels and the necessary basis to generate its constant selfrenewal.
- The capacity to maintain along with the intermediate and superior demands of the educational system a fluent communication and accuracy and speediness in the practices procedures.

Which are the characteristics of the educational system's intermediate demands which attempt to maintain a high quality level in its services?

- The excellent disposition and technical management capacity of its members to provide proper assistances when they are requested for by the centres.
- The effective and timely reply capacity in relation with requirements of professional improvement requested by the centres of its jurisdiction.
- The technical capacity to collaborate in institutional evaluation programmes when it is requested.
- The technical or management capacity to organize with the educational centres of its jurisdiction, popular educational research, innovation, information diffusion, etc. programmes and projects, destinated to contribute in the region and zone's life quality improvement.
- The excellent disposition and capacity to manage in front of the student government demands, to attain the support which the centres require in its programmes of creation and restoring the necessary conditions to attain its purposes.
- The sufficient technical disposition and

capacity to register, to process, to interpret, and to circulate information towards the conduction demands and towards the centres of their jurisdiction.

What characterizes the rank contribution carried out by the media, to the educational projects purposes which contributed to elaborate?

- The excellent disposition to search the all possible ways to contribute to the educational work carried out by the institutions out and within its borders. Complementarily, the continuity and success of its actions.

What characterizes the government demands and educational conduction in the effort to generate the necessary conditions to attain the highest teaching quality?

- The elevated compromise and high capacity to generate the neccesary, so that with the contribution done by all sectors the basis of an educational project coherent with the society and the country's political project agreed to promote will be performed.
- The adequate technical capacity to develop, with a basis in the in force educational project, the technical and legal necessary documentation which will direct and will control the institutions' job (curricula lineament, rules, supporting, documents, etc.).
- The high effort and the sufficient management capacity to generate the indispensable conditions from which the centres and other organizations will have the real opportunity to attain reasonable achievement levels in the project's purposes.
- Having available an integrated and integral information system which allows, among other things, to detect new requirements and, in relevant points of a time continuous, to know which are the execution levels that the Educational Project is attaining, such as its specific purposes and as in the generation of the conditions which makes it possible. Complementarily, upon the factors which would have facilitated or hindered the management.
- A dynamic reply capacity to decide, in the timely moment and in front of the information which is being obtained, new action direction.

It should be understood that the idea of making clear with priority the necessary conditions to obtain good quality products, is of special utility to direct the diagnostic evaluation processes of reality as it is observed. Before initiating the gradual application of a programme tending to increase the compromise and the achievement capacity of the system. This will allow to draw attention to the disagreements between what is really needed and with the provisions, so that, peforming a previous feasibility study to order actions on time, all the groups initiate projects tending to create the necessary conditions to obtain expected results.

A third activity is directed to determine, in front of each explicit condition, the criteria to be taken into account to evaluate it, the procedures to pull out the information, the members who will take charge of it, the moment, the norm to decide its fulfilment level and the ways of organizing the information in the different situations and places so as to facilitate the continuous taking of decisions.

The following example should be considered: "A centre which is classified as a high level quality one, should have available a sufficient amount of bibliographic and didactic material in accordance with the educational project purposes that will promote it and with the capacity of useful handling of its users".

Herein, the work equipment of an establishment which has decided to face this task, will notice that some criteria are already specified in the formulation: enough amount (in function of the users's number and of what it is really required the different areas), to update (maybe not much in dates but in the nature of its content) according to the project's philosophy (emphasis in stimulating the imagination, the critical judgement, in supplying scientific versions of reality, etc) adequated to the users handling capacity (text which can be un-derstood by the majority), etc. The norms by which existing material will be rejected due to it does not adjust to the established criteria, will be the result of established agreements. The moment this evaluation is carried out will depend of the planned programme. Maybe at the beginning or at a near point of its start. As subsequently of the diagnostic evaluation and on the information basis obtained plans will be done thinking on one, two or more years term to maintain in a good level the mentioned condition, the future evaluations will refer to its attainments and to the adjustment that would be done during time in relation with the new elaborated materials. This shall facilitate to have available in every moment updated information about the estate of the mentioned condition or about the other ones. (Focus which surpasses the conventional and barely useful evaluation forms of the institutions).

The way of presenting the information is of special importance to visualize in a simple and quick way is being operated in such sense. Maybe the following chart can help as an example.

CENTRE	ZONE		REGION		
			Plan to overcome the deficit		
Necessary condition for the achievement of institutional objectives.	Diagnostic March 1988	Acquisition Feasibility	Management Start	Foreseen Ending	Instances which intervene
* To have available sufficient and up dated amount of bibliographical material...	* From a total of 1.500 models the 50% does not adjust to the established criterion.	The research allows to predict its attainment in a term of not more than one year	May 88	June 89	A B C D * *
	* 300 exemplars are needed which list is attached. Needs are distributed in this way:				
	Science	50			
	Social Studies	100			
	Arts	20			
	* The amount which they imply is of A 5.350				

References
A - School (existing funds)
B - Student's family
C - Media Organization
D - Zone Instance (Existing Funds)
E - Regional Instance (Existing Funds)
F - Ministry Instance

The information of this chart precises a deficit noticed and in this case due to the object's nature, quantified. It also points out the diagnostic date, an indication of the deficit improvement feasibility study in a foresighted lapse of time and the instances that will intervene to create a condition which border was evaluated by the teaching staff. It is important to point out that in the scheme, a possible responsibility distribution will combine with a general interest project. It is also important to state that, should the possibilities of the other instances be exhausted, the Ministry, through, its specific unities, will have to gather disposition, within a period of time previously established, of a certain amount of material which cost will be estimated.

The adoption of new charts that provide information will facilitate the observation, on one hand, the mobilization capacity of the group, and the compromise to solve what is within the possibilities (naturally enlarged by the force intensity arising from such compromise). On the other hand, it will reflect the portion in which the Ministry's resources are sufficient to cover the material percentage that the different possibilities will demand. Once its economical capacity is determined, it is possible to decide its contribution with part of the amount and the remainder may be requested to the Compensation Federal Fund. The example's intention was to explain the actions which will be used concerning a programme functioning applied not only to know the education quality but also to the immediate use of such information by the different instances interested on transforming all what may contradict an educational project performance supported by the different sectors which actively participate in the society's democratization process.

Organic Mechanisms

The effort that represents to obtain with certain recurrence more accurate information about the quality levels which an educational system is attaining, is only justified if the same one is timely used as a basis to decide the necessary actions to be taken. But, in order that this be possible several conditions should be present or should be created. Among them:

- A sufficient social valuation about the importance of supplying the most high quality education and a special sensibility of all sectors to demand it and to immediately react when the levels are below the established expectatives.
- The existence of the system's organization forms which will facilitate a quick and effective mobilization of its different instances in front of deficits informed by the institutions.
- A sufficient space extent of decisions coming from the different instances and maintenance of an intense effort of its members to integrate this effort to obtain high attainment levels in the purposes defining the educational system in force.
- The existence of a programming style and a management control, based on an adequate information system, which will make possible the improvement, recesions, and stagnancy evaluation starting from a basis-point of the attainment levels noticed.

What has been stated constitutes a possible reflection foundation directed to state precisely whether with the present organic structure, the inclusion of a continuous evaluation process, of the work and of what is obtained, represents as meaningful task and with possibilities of contributing to generate the modifications which the research shows to be necessary. Deficient participation mechanisms: power strucuture vertical direction; rules; narrow institution decision borders; primacy of the administrative logic upon the pedagogic; institutional action forms in open contradiction with their principle contents; objectives which only fulfill a rhetoric function, adjustment of the work to what is available; etc., constitute omnipresence realities in multiple points and sectors of the system and in such sense, counter-pointed out to direct the energies towards a concrete search of social meaning and of education quality, also to the methodology adoption which will state precisely its impact.

In order that this occurs, it will be necessary to advance through approximation towards institutions which are defined as open, receptive, with sufficient timely reply capacity to the demands, with an anticipation sense, self adjustable, in a continuous process of critical reflection of their conflicts and contradictions and where the compromise to them attaining their purposes will be the reasons which will integrate and make dynamic the points of view and the demanding dissensions among the members who participate in it and that at the same time are their architects. This possible and desirable image, might find concretion ways in case the global society members assume participation styles which will contribute each day more and more and which will be effective in building political models that will strengthen a deep power democratization and of the fair use of its material goods and non material which are generated. From this optic, the educational institutions will tend to reproduce the action styles that define such dynamic and to provide what is necessary to whom participate, in order that they become active protagonists of all that means the transformation and/or the condition creation that will assure the multiple social-cultural groups members its complete human fulfilment.

Referring to what is possible immediately and that is linked with the task of making available and of knowing the use given to information about the quality levels that the institutions attain, the idea which should priviledge the analysis efforts in relation to the diverse instances support activities, and to the base game of responsibilities and iniciatives would be centered in the following force-ideas:

- As the educational institution is the system point where processes which justify its existence are performed and as a consequence, the vital element of its structure, the criterion which will direct its relationship with the same ones, will be to grant the maximum confidence and support to its management and the most ample decision space that will allow to exercise the social responsibilities that its members assume in relation with its specific work.
- The educational institution in its nature of being a system's organ which has the sufficient space to decide all concerning with the better means to attain the educational project purposes and principles that gives sense and direction to its efforts, it will operate its institutional responsibility through actions that, at first, will support on its own real or potential forces, which might be conventionals or non conventionals. Only when what is in existence exhausts, it

will fix limits to the responsibilities and it will require, according to the deficit's size and nature that attempts to recover, material and/or technical support at the zone, district, region, student government, which will integrate their replies to the action plans of the institutions that will be created in the short, medium, long term.

- The educational institutions will assume, as the aforementioned correlate, the responsibility, as first priority, to carry out what is necessary to have available, reliable, sufficient and valid information about the influence of their own actions, and will use when necessary, external evaluators that will contribute that the required information is more reliable. The information attained about the levels achieved starting from a management base-point, such as in the conditions creation as in the educational purposes acquisition, is an inheritance of all the people, groups or institutions involved. As a consequence, it will be important to hold public meetings where the aims attainments noticed in the zone or district institution and the factors which would have determined it are analysed. Complementarily, the relations between what was foreseen and what was attained between a deficit global chart initially precised and what was attained in the different points of a continuous effort up to its total improvement.

This focus attempts to emphasize the condition installation that will favour the force release which are neutralized or have not been taken into account in the organization conventional forms and system conduction that will generate power in the institutional capacity to attain the purposes which define the educational project that is attempted to perform. This implies to give confidence to the centre's members in its creative and producer power; to eliminate all kind of controls that in practice they have not only lack effects over the quality improvement but, on the contrary, they have operated in opposite sense; to aid them as requested and provide them through a valuable, timely and effective assistance, or through a requested financial contribution. Also to give them what they really need to create the indispensable conditions to attain the institutional purposes and, which without its concurrence its acquisition is seriously endangered.

Which organization would make easier the obtaining, the prosecution, the communication and use of the information related to the education quality?

Once more, it is reaffirmed, that the organization problem is not much related with the information extraction, but to the conditions required in order that such information will be used immediately with a purpose that justifies the effort demanded to its acquisition. In this respect, it is recalled that since the 70's, in many countries tests have been applied which have revealed the low attainment levels that achieve certain group members after going along the formal system during 6 years or more. Nevertheless, it is unknown that the systems, in itself, have demonstrated the reversion of such system in order to have available an organization adapted to receive the information and to do variations, in the short term, their strategies tending to surpass the noticed deficit. It has been more clear to appreciate it in mistakes which its solution would not require to increase its financial part, but to have a new vision of the problem and new practices which would solve it (contents with lack of social meaning, separated from the students needs; methods centered in the data memory reproduction; teaching staff practices that are conformed only by asking if they understood or not, but they avoid finding out which functional handling level; etc.).

If it is of course true that there can exist variants starting from the principles which base more suitable options in the pointed out sense, it is, now suggested a possible organization line which would make easier to answer the posed question.

- All educational centre should count with a programme devoted to the constant quality search of its services and attainments. A work group more specifically interested in finding out the solution of the technical problems related with record, interpretation and evaluation of the multiples referred to consider, would colaborate with all the other personnel in the task to identify the lacks, such as in the necessary condition to institution purpose concretion, as in the attainment levels observed in the institutions. Starting from this information and on the basis of a feasibility analysis which the staff would perform, the institutional projects that would attempt to create the necessary conditions to achieve reasonable attainment levels in the institutional purposes would be determined. In such plans, it would be differentiate the ones built in an exclusive action basis of the center's members, the ones performed with the zone contribution and the ones that would be covered with the concurrence of other instances (regional or from the ministry). For the evaluation task, the work group would request the necessary assistance to the technical unities of the system, such as to agree criterions, norms, etc., as to intervene in evaluation external agents in those agreed aspects. At the same time, the ways of presenting the information would be established, such as to analyse it in the educational center, as to make it circulate to the other instances according to purposes to be established.

Simple ways of organizing the information would make easier the diverse commissions product comparison that would take the project's responsibility during the established terms (1,2,3, years?) and at points of continuous which are considered interesting (each 3,4, or 6 months?).

- At each district or educational zone (jurisdiction that would embrace a geographical space previously agreed, where there exist pre-school, primary, secondary, especial, etc. educational centres) it should exist a work commission incorporated to the education quality improvement Programme, that would have the responsibility of diverse functions. Among them, the information reception in relation with the subject that would be periodically sent by the zone centres; the organization of such information so as to allow a quick knowledge of the attained achievements in each centre and of the posed projects to transform the lacks and to elevate the acquisition levels of some of their purposes; to send to the immediate instance (regional or ministerial) a technical report with an adequate information rearranging which will make easier a clear vision of the problem's state and a direction about the action to be carried out in the short, medium, and long term; to control projects in which the participation is indispensable according to what was agreed by the zone institutions (such control may consist in: searching people, resources within the jurisdiction that will help in the centre that requires it, to provide to members of its staff assistances which are considered necessary; in the appropriate mobilization to avoid that some students abandon due to their parents economical difficulties; in the organization of popular education programmes, etc). The rearranged information about what may occur in each establishment included in the Programme, would be returned in order that its staff will analyse it in group and will give the case conclussions.
- In each educational regional jurisdiction (field constituted by many zones, in the frame of a geographical space determined by agreeed criterion) it should exist an incorporated team job, as the previous case, in the education quality promotion Programme. Its members's job would be similar to what was aforementioned, the only difference would be that it would be considered from a more ample geographic ambit perspective.

  On this very point it should exist a technical assistance body (ex-supervisors whose functions and budget revision were transformed and ranked to insert them in activities adapted to a new idea of the system structure and of its work) with a more especialized education in certain areas of knowledge, and in evaluation, research, innovations, didactic, who would act according to demands of the institution and zones to help to create -where it is necessary- the necessary conditions required to attain the purposes of the educational centres.

  The regional technical team would put in order the information coming from the zones and would point out, as in the previous case, what is being attained in the zones and which aspects need with priority the school government instances' economical support. The data would allow to precise whether the system, other zone and regional organizations actions in its whole, are attaining, for example, a real access and retention democratization of the students (specially relating with those coming from unfavourable social economical means.); if it is noticed an impact in the life quality of such ambit members as a consequence of deliberated action carried out by the integrated work teams that operate in the same ones, if the students percieve the importance and meaning that will have in their lifes and also for a more satisfactory social insertion, etc. what they are learning.
- At the Ministry of Education of each provincial State it should function a Unity of Evaluation and Management Control of the Educational System, and one of its section would be linked with the education quality improvement Programme. In such sense and on the basis of interprovincial agreements, it would fix the necessary to normalize the use of certain instruments, methodologies, evaluation criterion, putting in order the information, reception periods of time, etc. At the same time, it would act as a regional assistance entity in the aspects previously pointed out. This Unity would elaborate, with the material sent from each region, an informative summary about the attainment levels that would be obtaining the zones, institutions and regions, such as maintenance and/or the necessary conditions creation to acquire the purposes of the institutions, zones, region of the general education system, as in relation with the attained levels in the

group formation and preparation. In front of agreed parameters, the lacks which seriously involved specific purposes of the system will be underlined, stating clearly which could be solved with the provincial effort and identifying the ones which require an immediate aid of the national entity.

- In the Ministry of Education of the country should be established a Unity of Programmes and Projects Management Control Evaluation, one of which actions would also be linked with the National Programme of Education Quality Improvement. Some of its possible functions would be:
  - To coordinate criteria upon types, records, processing, systematization, conservation, recuperation, circulation and use of the information that will be utilized in the evaluation process in the different jurisdictional ambits.
  - To provide technical assistance on required by the provincial States in the ample espectrum of matters which are part of the evaluation problem.
  - To coordinate the more suitable forms and procedures to evaluate quality, efficiency, effectiveness, and social meaning of the educational system's work starting from common criteria which will provide valid comparison foundations in relation with the achievement levels noticed in the creation and maintenance of the necessary conditions for the concretion of the systems's purpose and its acquisition.
  - To coordinate supporting financial forms when some provincial States were not able to cover determined evaluation programmes agreed as necessaries to decide important lines of action.
  - To concentrate, process, organize and spread with certain periodicity to multiple audiences, information linked to the system's educational attainment levels obtained in various purposes and on the basis of the parameter group which would be considered timely to be taken into account.
  - To provide periodical, sufficient, valid, and reliable information about the education situation in the provincial States to the organism that will be in charge of the necessary financial compensation study to be granted when the noticed lacks cannot be solved exclusively by themselves.

TEXTS IN STUDENT ACHIEVEMENT AND IN TEACHING METHODOLOGY

Primary Textbooks Project in Jamaica

Nancy A. George (*)

Since the beginning of the 1970s, the Ministry of Education of Jamaica has been publishing a series of texts for primary school level with the collaboration of a number of international organizations (Unesco, IDB, OAS). These texts have been particularly important for the curriculum at the national level and were distributed in class sets to public primary and all age schools with a view to reaching all students.

However, as the economic crisis initiated at the end of the 1970s deepened and due to the increase in the cost of books, despite the Government of Jamaica's stated policy of universal education it was forced to decrease the production of these texts.

In this economic context, the Primary Textbook Project (PTP) was born in 1984 as a collaboration effort by the Ministry of Education, the Gleaner Company, 34 Jamaican private sector firms,CIDA/CODE, US/AID and Unesco/UNDP. Since its inception the PTP has annually provided texts and manuals in Reading and Mathematic Language to 350,000 students and teachers.

The PTP prints and distributes free of cost 2.7 million texts to students and teachers.

Follow up of the impact and effectiveness of the PTP

As part of its agreement with the Canadian Organization for Development through Education (CODE), the Ministry of Education conducts an annual follow-up survey of the impact and effectiveness of the texts distributed through the PTP. This follow-up consists of a longitudinal analysis on the role played by these texts in the Jamaican educational system. Its main objective is to register the differences (if any) observed in the interest and achievement of the students in pre-defined areas as a result of the distribution of texts at the individual level. Another additional objective of this follow-up activity consists in determining the impact that text distribution originates in the teaching methodology of teachers. Undoubtedly, there exists a direct relationship between the teacher's methodology and the student's interest and their progress in the subject areas.

As previous to the inception of the PTP there was no information in this respect, the study has been based on information annually collected by principals, teachers, students, parent/guardians. Though isolated information collected in a year is not fully reliable, a pattern is appearing as of these evaluations from which some preliminary conclusions can be drawn about the programme's success and recommendations can be set forth for future modifications of the same.

During the first year principals, teachers, students, parent/guardians were informally interviewed with the aim of establishing the impact and effectiveness of the approach with the least possible presumptions and preconcepts. These general interviews and category of responses constituted the foundation for establishing later closed questionnaires which

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Translation from a Spanish version of the original article.

have, in forthcoming years, been used with interviewees.

As the orientation of the study is of a longitudinal type, as much as possible the same students are included each year. In Year I, Grade 1, 3, 5 students were interviewed, in Year II, Grade 2, 4 and 6 and in Year III, Grade 1, 3 and 5. In this way, students that in 1985 were in Grade 1, in 1987 were in Grade 3. In the Year III, students from Grade 5 had had two years of school experience before the PTP implementation, during which, they probably had no access to any type of texts.

In the Year III, as in previous years, the main methods of data collection consisted of personal programmed interviews to principals, teachers, students and parent/guardians, and additionally the information was also presented through a recording of the meeting held with the interviewees who contributed their experiences towards this task. Wherever possible, the original 82 sample schools interviewed in previous years, were retained: (1) 20 city/town schools and 62 rural/remoted schools. In the Year III emphasis was placed on teachers, students, parent/guardians of Grades 1, 3 and 5.

In the 1987 report a warning was included for data interpretation:

"... The researchers observed that, in many cases, a "halo effect" governed the responses to the questions they asked. Many respondents appeared relunctant to give any negative -or even neutral- response for fear of endangering the programme and/or putting the receipt of the books at risk..."

This observation is consistent with the fact that the questionnaires have had a really positive response to the Project each year, from all categories of interviewees.

Nevertheless, taking into account this warning, several of the results obtained merit detailed discussion and analysis.

Increase In Student Interest and Achievement Attributed to the PTP

Teachers as well as students and parent/guardians were asked the same questions in relation to the interest and achievement of students in Reading, Language Arts and Mathematics. The options for each of the questions were: increase, decrease or no comment. Table 1, provides the responses of students on their interest and achievement (S), of their teachers (T) and of their parent/guardians (P). For each question, all categories of interviewees reported considerable increase in the interest and improved achievement of the students. Only Grade 5 teachers of city/town schools reported better achievements among students with a lower percentage rate of 60% and only in Reading and Language areas.

The responses and their frequency indicate that the PTP, while having had a positive effect on all students, has had the greatest impact on rural/remote school students. Rural/remote teachers reported improvement in achievement among their students with approximately ten percent more frequency than the city/town teachers at the same grade level.

In Mathematics, for example, 91.9% of rural/remote teachers of Grade 3 reported that their students were achieving higher marks while 80.0% of the city/town Grade 3 teachers reported their students's getting higher marks in Mathematics. The same 10% differential in frequency of reporting higher grades also appears in the Grade 3 Reading and Language Areas reports. Almost 80.6% of rural/remote teachers reported their student's getting higher marks in Reading and Language.

In Grade 5 Reading/language Arts, 45.0% of city/town teachers reported their students getting higher marks, while almost 75,8% of rural/remote Grade 5 teachers reported their students' getting higher marks in Language Arts. This remarkable difference in reporting frequency may well reflect the fact that prior to the PTP city/town students were more likely to have access to texts than rural/remote students at that grade level. Grade 5 is the year that students begin to prepare for the Common Entrance Examination (CEE), and if there are texts to be acquired for schools, the sacrifice would more likely have been made at this grade level than in earlier grades.

Table 1, however, seems to emphasize the fact that the shortage of texts was more acute in the rural/remote schools than in the city/town schools prior to the PTP.

The findings indicate that at both Grades 3 and 5 the impact of the availability of Mathematics texts is greater than in the case of the Reading and Language texts. More class exercises, for example, are reported being done correctly by both city/town and rural/remote teachers in Mathematics than in Reading and Language at both Grades 3 and 5. Only Grade 5 rural/remote teachers reported lower frequency of " higher test marks" in Mathematics than in Language Arts; in both city/town and rural/remote in Grade 3 and city/town in Grade 5, the frequency of higher test marks is greater in Mathematics than Language Arts.

This positive impact is the more remarkable because of the problem identified in previous years associated with the introduction of a Mathematics text which did not match the curriculum to which the teachers were accustomed. It may be that this greater impact can be partly attributed to the two years of teachers' training workshops in Mathematics run by the Ministry of Education in collaboration with Ginn & Company and The Gleaner Company to try to assist the teachers who found this new Mathematics series somewhat difficult to manage.

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(1) The sample represents 10,4% of the total number of primary public and all age schools selected on an equal basis throughout Jamaica.

Whatever the reason, the 1987 survey definitely revealed that the Mathematics texts have a markedly greater effect on students than the Language Arts texts. All categories of interviewees -students, teachers and parents-, report increased interest in both Mathematics and Reading or Language Arts. It is worth noting, however, that, whereas city/town students reported and increased interest in Reading/Language Arts at both Grade 3 and 5 level more frequently than they reported an increased interest in Mathematics, the trend is reversed among rural/remote students at the Grade 5 level, and the increase in interest is reported with equal frequency at the Grade 3 level. All teachers interviewed in the survey seemed to agree that their students had increased their interest in Mathematics more than Reading/Language Arts with the advent of the PTP texts. Nevertheless, this could be caused by the confidence acquired by the teachers in the teaching of the subject using the PTP texts as their own responses about their increased interest in Mathematics.

It should be emphasized, however, that the reported increases in interest and achievement among students occurred with remarkably high frequency in all categories reported. The lowest frequency increase reported is 45% from Grade 5 city/town teachers of Reading/Language Arts. These teachers indicated that the marks in Grade 5 Reading/Language Arts had remained about the same as before the PTP with approximately the same frequency that they reported increases in marks.

There are some interesting contrasts in reports in Table 1 as well. Grade 3 city/town students report doing more classwork in Mathematics with a frequency of approximately 67.5%; however, their teachers reported the students' doing more classwork in mathematics in 95% of those interviewed. The grade 3 teachers also perceived the students doing more class exercises correctly (85.0%) than did the students themselves (69.2%) in Mathematics. Grade 3 teachers of Mathematics perceived their students' doing more homework (85.0%) than did their students (59.2%). The teacher/student comparison of perceptions is much closer in frequency in Reading/Language Arts than in Mathematics at the Grade 3 level in the city/town sample; the comparison is closer in frequency in both subject areas among the students and teachers in the rural/remote sample. All categories of interviewees, seem to agree that the PTP has had a positive effect on student interest and achievement.

Teachers' Perceptions of Impact of the PTP

In addition to reporting positive changes in student achievement, teachers reported other positive changes in their students since the advent of the PTP. Most of the reported changes occurred with greater frequency among rural/remote teachers than their city/town counterparts (see Table 2). Again, as in the reported improvements in student achievements, the changes are reported more frequently in Mathematics than in reading and language Arts among city/town teachers, and with almost equal levels of frequency among rural/remote teachers.

For example, Grade 3 city/town teachers reported that class work progressed more quickly with equal frequency for Reading/Language Arts and Mathematics (80%); however, they reported their students progressing at a faster rate in Mathematics (15%) more frequently than they did in Reading/Language Arts. These same teachers reported the students come to class better prepared in Mathematics (15%) more frequently than they did in Reading/Language Arts.

Again this greater progress in mathematics may be attributed to the two-year teachers' training workshops aimed at training them in the use of the series of Caribbean Primary Mathematics. The increase in the teachers' reliability in the use of these textbooks could be closely associated with the students' progress and their perception of the positive achievements observed in Mathematics.

Grade 5 city/town teachers reported "classwork progressed more quickly in Mathematics" in a frequency of 95%. Only in the item "students progressed at a faster rate in subject" did Grade 5 city/town teachers report improvement less frequently in Mathematics than in Reading/Language Arts.

Among rural/remote teachers at both Grade 3 and 5 levels, the reported frequencies of improvement are closer between the two subject areas, usually varying only two to three percentage points. However, in three items, progress of classwork, student progress and students' preparation for class, the frequency of reporting improvement is consistently greater in both subject areas at the Grade 3 level. Only in reported use of the texts outside the class does the rural/remote frequency fall below that of the city/town teachers' reports of increases.

Teachers in both city/town setting and rural/remote settings reported improvement in

Table 1
Perceptions of Student Interest and Achievements in Reading/Language Arts and Mathematics.

		City/Town						Rural/Remote					
		Gr. 3º			Gr. 5º			Gr. 3º			Gr. 5º		
		S	T	P	S	T	P	S	T	P	S	T	P
increased interest in subject	M	70.8	80.0	78.6	85.8	85.0	87.2	82.8	90.0	79.3	85.5	87.0	82.9
	R/LA	74.2	70.0	81.2	90.0	70.0	82.0	82.2	80.6	84.2	83.3	75.8	82.4
higher marks in subject	M	77.5	80.0	65.8	75.8	65.0	82.9	86.6	91.9	78.3	82.8	79.0	80.2
	R/LA	74.2	70.0	71.8	85.0	45.0	88.2	82.2	80.6	82.6	83.3	75.8	81.8
doing more classwork in subject	M	67.5	95.0	-	83.3	75.0	-	86.6	92.0	-	83.9	90.3	-
	R/LA	76.7	85.0	-	71.5	90.0	-	88.2	83.8	-	84.4	88.7	-
doing more class exercises right	M	68.3	80.0	-	75.8	80.0	-	83.9	88.0	-	80.1	88.7	-
	R/LA	69.2	65.0	-	69.2	75.0	-	73.7	83.8	-	87.6	80.6	-
increased class participation	M	70.8	90.0	-	81.7	90.3	-	85.5	95.0	-	86.6	95.0	-
	R/LA	75.8	80.0	-	82.5	95.0	-	82.2	96.7	-	86.6	93.5	-
doing more homework in subject	M	59.2	85.0	-	75.0	65.0	-	73.1	72.5	-	80.1	74.1	-
	R/LA	63.3	60.0	64.1	64.2	70.0	77.8	72.6	74.1	55.4	70.4	80.6	77.5
increased independent work done	M	53.3	75.0	-	70.8	80.0	-	76.3	79.0	-	76.3	79.0	-
	R/LA	71.7	75.0	-	66.7	80.0	-	77.4	70.9	-	78.0	79.0	-
more enthusiasm for school		83.3	-	75.2	90.0	-	69.2	88.7	-	76.0	91.4	-	76.5

Codes: M = Mathematics; R/LA = Reading/Language Arts; S = Students; T = Teachers; P = Parents

Table 2:

Teachers' Perceptions of Positive Change in Student Learning Patterns, since PTP

		n = 40 City/Town		n = 124 Rural/Remote	
		Gr. 3 n = 20	Gr. 5 n = 20	Gr. 3 n = 62	Gr. 5 n = 62
class work progresses more quickly	R/LA	80.0	85.0	85.5	82.0
	M	80.0	95.0	82.0	83.9
students progress at faster rate in subject	R/LA	55.0	75.0	82.0	83.9
	M	70.0	60.0	80.6	79.0
students come to class better prepared	R/LA	65.0	75.0	79.0	77.4
	M	80.0	80.0	75.8	74.1
students spend more time out of class using texts	R/LA	50.0	60.0	56.5	56.5
	M	75.0	80.0	50.0	59.7
spoken English has improved		45.0	30.0	47.0	26.0
written English has improved		65.0	50.0	76.0	54.8
standard of numeracy has improved		80.0	80.0	88.7	83.9
deviant behaviour in class has decreased		65.0	50.0	59.7	61.2

spoken English with much less frequency than they reported improvement in written English. There is at least a 20% difference in the frequency of reported improvement in written and spoken English, the lowest frequency of improvement being reported by Grade 5 rural/remote teachers (26%). There is, however, a significant body of knowledge, both in Jamaica and in other English-speaking countries, which asserts that access to texts alone will not improve the standard of the spoken language; therefore, this report should not be surprising.

In contrast, both city/town and rural/remote teachers reported improvements in the standard of numeracy at both grade levels with significant frequency. 80.0% of city/town teachers at each grade level, 88.7% of Grade 3 rural/remote teachers, and 83.9% of Grade 5 rural/remote teachers reported that the standard of numeracy has improved with the PTP. The fact that the reported decrease in deviant behaviour in class is less frequent than other reported changes in performance and behaviour should not be viewed negatively. In many cases, teachers were puzzled by the question, (according to the researchers), saying that there had not been deviant behaviour in class before the PTP; therefore, there could not be less now:

"My class has always been disciplined; to say that deviant behaviour has remained about the same does not accurately reflect the atmosphere in my classroom; I don't know what to answer to this question". (2)

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(2) Rural/remote teachers' response to question, quoted by a researcher in debriefing session, January 30, 1987. It is worth noting that other researchers agreed with this response, and also cited principals' responding the same way to a question about deviant behaviour in their interview schedule.

Nevertheless, 65.0% of Grade 3 city/town teachers, 50.0% of Grade 5 city/town teachers, almost 60.0% (59.7%) of Grade 3 rural/remote teachers, and 61.2% of Grade 5 rural/remote teachers reported decreases in deviant behaviour in class. The remainder of the respondents indicated that deviance had remained about the same or indicated that they could not answer the question.

Teachers' perception of impact of the PTP texts on teaching techniques

Teachers' interviewed belonging to the three grades both of rural/remote and city/town schools overwhelmingly agreed that their teaching techniques had generally improved with the advent of the PTP. Over 90% (grade 1: 90.3%; grade 3: 91,9%; grade 5: 93,5%) of all rural/remote teachers agreed that their teaching techniques had improved with the inception of the PTP. In city/town schools, 85% of grade 1 teachers, 65% of grade 3 and 90% of grade 5 teachers also reported that in general terms their teaching techniques had improved with the PTP.

Some city/town grade 3 teachers reported that their students had texts available prior to the advent of the PTP, and therefore, among them the impact of the project was less than in other grades (even compared to the equivalent grade in rural remote schools).

According to the positive responses to the items included in Table 3 (see Table 3) teachers demonstrate more flexibility in their teaching techniques, covering more work in class,

Table 3: Teachers' Perceptions of Impact of PTP on Teaching Technique

		Grade 1	Grade 3	Grade 5
give students more individual attention	c/t r/r	80.0 71.0	80.0 88.7	85.0 82.3
correct more exercises in class	c/t r/r	70.0 79.0	90.0 90.3	80.0 80.6
cover more work in class	c/t r/r	70.0 89.0	80.0 80.6	90.0 82.2
spend more time with slow students; others work independently	c/t r/r	85.0 80.6	90.0 91.9	95.0 85.5
greater scope to give assignments by group level	c/t r/r	80.0 74.2	65.0 88.7	85.0 88.7
can do more group work	c/t r/r	90.0 72.6	65.0 83.8	85.0 82.3
copy less material on chalkboard	c/t r/r	65.0 79.0	80.0 72.6	75.0 77.4
make greater use of ready-made exercises	c/t r/r	60.0 64.5	60.0 69.3	65.0 69.4
assign more creative work to students	c/t r/r	90.0 72.6	80.0 71.0	75.0 77.4
assign more homework now	c/t r/r	75.0 70.9	90.0 80.6	70.0 85.5
spend less time correcting deviance	c/t r/r	80.0 64.5	75.0 83.9	60.0 67.7
in general my teaching technique has improved	c/t r/r	85.0 90.3	65.0 91.9	90.0 93.5

providing more variety of approach to lessons in class, and demonstrating the ability to deal with different learning rates in class more easily.

Again, teachers expressed bewilderment at the question about deviant behaviour in some cases, since they did not perceive it as being applicable to their classroom at any time.

The question concerning the use of ready-made exercises also deserves some explanation. The frequency of agreement to this statement was somewhat lower than to other questions across all grade levels although agreements still ranged upward from 60% (60-69.4%). Teachers reported in 35% of the cases that prior to the PTP they already used ready-made exercises to a similar extent as that of the programme. Few teachers (5-10%) reported that they were still developing their own exercises, rather than using the ones provided in the texts and manuals.

Teachers were spilt on the impact of the PTP on their need for teaching aids and the time needed for pre-class preparation (see Table 4). There is no definite pattern of the impact on the need for teaching aids; about the same number of teachers say they need more teaching aids as say that they need fewer aids. The lowest percentage stated that they needed about the same number of aids. The greatest agreement appears at the Grade 3 City/town and Grade 5 rural/remote levels, where the 55% and 51,6% respectively of the teachers reported that they need fewer teaching aids. The lowest frequency response occurs at the Grade 5 rural/remote level, where only 3.2% of the teachers agreed that they needed the same number of teaching aids as they did prior to the PTP.

When asked about the change in time needed for pre-class preparation, the same disagreement among respondents surfaced. At the Grade 1 level, 55% of city/town teachers stated that they needed the same amount of pre-class preparation time; their rural/remote counterparts agreed that they needed the same amount of preparation time twenty-one percent (21.1%) less frequently. The most frequently-occurring response to the issue of time needed for pre-class preparation at all grade levels and geographic locations (except Grades 1 and 3 city/town) is "less time is needed for pre-class preparation". Grade 1 city/town teachers indicated that they needed about the same amount of time, and Grade 3 city/town teachers, in a higher percentage, indicated that they needed more time.

Table 4 seems to reveal teachers' different approaches to the same didactic material, rather than offering information about the impact of the PTP on teaching techniques. The lack of any consistent pattern to the responses seems to reveal that the influence of the availability of texts on the teachers' techniques will vary depending upon the teaching style of the individual.

Conclusions

The response to the Primary Textbook Project (PTP) in Jamaica has been remarkably positive for all involved: parents, students and their teachers. Response has been more favourable among those who were in a less advantageous situation: those in rural/remote areas of Jamaica, where students had less access to texts prior to the inception of the PTP.

The positive response of teachers, students and parents to the questions about student in-

Table 4

Aspects of Teaching Technique on which Teachers' Perceptions of the Influence of the PTP are Divided

	Grade 1		Grade 3		Grade 5	
	c/t	r/r	c/t	r/r	c/t	r/r
need for teaching aids:						
need more	40.0	40.3	35.0	41.9	40.0	43.5
need fewer	40.0	38.8	55.0	33.9	45.0	51.6
need same number	20.0	19.4	10.0	22.6	10.0	3.2
need for pre-class preparation time:						
need more	10.0	30.6	45.0	25.8	20.0	17.7
need less	35.0	33.9	40.0	48.4	55.0	48.4
need same amount	55.0	33.9	15.0	23.1	25.0	33.9

terest and achievement in those subjects on which texts were distributed by the PTP, is higher among those of rural/remote schools surveyed than among their counterparts of city/town schools.

The survey on impact and effectiveness undertaken in 1987, revealed that teachers considered having improved in their teaching techniques thanks to the texts available and, furthermore, improved interest and achievement of the students in Mathematics and Reading/Language arts was noted.

Undoubtedly, there is a close connection between the teachers' classroom techniques, the teaching methodology and the level of interest and achievement of the students. Due to this, the positive impact of the PTP is doubly strengthened when the three participating sectors-teachers, students and parents-agree to the existence of positive results attributable to the Project.

Likewise, there is evidence that suggest a close relation between the training workshops for teachers and their perception about the increased interest and achievement of their students in the subject matter on which the workshop dealt. During the first two years, workshops on mathematics were carried out aimed at providing advise to teachers on the use of new texts included in the Project. During the third year, both teachers and students agreed on their increased interest and their progress in Mathematics which was greater than in Reading/Language Arts. The previous year teachers had reported better achievement of their students in Reading/Language Arts than in Mathematics.

In the third year, apparently, survey findings reveal increased teacher reliability in the teaching of Mathematics, thanks to the workshops carried out in the two preceding years.

As long as the PTP continues, data will continue to be gathered concerning the impact and effectiveness of the texts and new information will be analyzed in the light of that already gathered since the inception of this Project.

TEACHING AID MATERIALS FOR THE TEACHING STAFF TRAINING IN BILINGUAL INTERCULTURAL EDUCATION

Massimo Amadio (*)

As it is well known, the task to guarantee a proper educational attention for the indigenous people of the latinamerican continent faces diverse lacks and challenges. Many of them go beyond the proper educational sphere and are themselves closely linked to the big, political, social and economic problems which in a greater or less degree have arised in the modern States of the region. The equality of rights and opportunities that in many cases has not been able to go beyond the declaration of principles; the validity of a homogenizing scheme questioned by the fact of penalizing and fighting the linguistic and cultural differences more than the social differences; the severity of the economic crisis that has harshly beaten the traditionally margined sectors and which makes difficult the implementation of the democratizing project assumed by the large number of the continent's countries. All these aspects necessarily constitute the framework in which the educational indigenous population problem is inscribed.

Along with the apparition of indigenous organizations in the political sphere of latinamerican societies, reestablishing their rights and defending their specifications, the current decade has also registered outstanding renewing efforts in the adopted approaches and an increase in the actions tending to solve satisfactorily the serious educational lacks detected in the indigenous media.

Nowadays a permanent debate is performed about matters like languages and cultures in education, which some years ago were considered as irrelevant, at least in the sense that there was no more than one language and one culture to consider-the official ones.

The measures that would be convenient to adopt so as that the educational attention corresponds with the current aspirations and demands of the indigenous people have been clearly defined. Several bilingual intercultural educational experiences of many countries are available, in which the student's indigenous mother tongue is used and elements of his cultural environment are rescued in order to adapt the educational process to his characteristics and needs.

It is obviously required, on one hand, an important modification in the attitudes of the social individuals towards the linguistic and cultural plurality, and on the other hand, a transformation of the criteria which guide the training of the educational agents to adequate it to the new suggested modalities,in order that the changes which have been tested are strengthened and will produce lasting effects.

Particularly, should a bilingual and intercultural education be promoted, according to what contents should the teacher's training who work in this field be focused, with what kind of materials and by means of which activities? A brief analysis of the situation in the different countries reveals that the answer to these most important questions is still in an initial stage. It is difficult to find specially designed materials for the teaching training in bilingual intercultural education or curricula specially made in order to have personnel with these characteristics.

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Within the few existing, it is sometimes noticed what seems to be the result of an adjustment and a readaptation process of what has been practiced up to now, instead of the elaboration of something different in consonance with the new practices which are being experimented.

Trying to give an answer to these problems from a regional perspective, as it was discussed in the workshop about the elaboration of intercultural curriculum and preparation of didactic material for the teaching of and in the mother tongue celebrated in Buenos Aires, during October in 1986 is much more difficult. During this activity, organized by the Unesco Regional Office for Education for Latin America and the Caribbean (OREALC), the specialists summoned argued at length about the convenience and opportunity of preparing a guide for the bilingual teacher with a regional coverage.

In front of the evident diversity of contexts and specific situations and respecting the criteria of adapting means and contents to the sociocultural characteristics of the involved individuals in the educational process. Isn't it totally wrong to propose the elaboration of conceived materials so they can be used in different countries?

In front of the evident lack regarding the stock existence for the intercultural bilingual education teaching training in the great majority of countries,and accepting the challenge of encouraging its elaboration, starting with a group of them from a regional perspective, what contents should be considered, taking into account the aspects and difficulties in its treatment and which means of activities should be used in order to appreciate its relevance?

It is around this nucleus of problems and during 1987 OREALC has developed several activities financed by special contribution of the Spanish Government in order to support the actions carried out in the different countries to train personnel and to solve the aforementioned problems.

The Criteria

The specialists who participated in the Buenos Aires Workshop analyzed with special care the proposition to elaborate a basic guidance and concept manual related with the intercultural bilingual education to be used at a regional level. In spite of the difficulties and risks already mentioned, the lack of information and dissemination of knowledges and elements of analysis regarding the improvements, attainments, difficulties and perspectives of the bilingual education in the region was evident. The urgent need to count with supporting instruments at hand of the different educational agents in order to favor a critical analysis of the educational situation and a better implementation of the new suggested modes of procedure was perceived.

The advantage to offer a systematized, integrated and dynamic set of knowledges and experiences was determined, this was specially designed to contribute to a better training and sensibility of the people involved in educational development in indigenous areas: promoters and community leaders in-service teachers, supervisors, trainers, technical counselors, students and teachers of educational training centers.

According to those objectives, the situations of heterogeneity and disparity more than a limitation could become and advantage for the intended plan, because, on referring to such different contexts it would be easier a better reflection of the inherent characteristics of a determined field. On the other hand an articulated treatment of a minimum set of general contents can be a suitable tool to produce closely linked instruments for specific requirements; complementing and supporting them in the case they already exist. Once established these premises, the question that rises immediately is: which are these contents and how are they to be presented?

At the Buenos Aires Workshop the areas to be considered in relation with the first part of this matter were defined in general terms: the cultural demonstrations, with the purpose of understanding their complex interrelation and to appreciate their vital importance and value; the linguistic aspects, with the intention to give basic elements to analyze the situation which characterizes a great number of countries in the region and the teaching challenges that from here emanate; the educational problem, with the intention to offer methodological and didactic options for a better planning and development of the intercultural bilingual education.

Taking into account the possible consignees of a text of this kind, some recommendations were also posed in Buenos Aires in relation with the way of presenting the relevant contents: to offer an integral vision of the contributions of the different disciplines; to use a simple and revealing language avoiding unnecessary technicisms and sophisticated theoretical matters; to develop the chosen subjects using practical and concrete examples with the intention to favor the analysis and thought process; to give a positive and dynamic image of the languages and indigenous cultures of the region; to keep a didactic and training perspective providing practical instruments in order to aid to the educational task.

In that way it was possible to shape with enough clarity the starting point for the development of the further activities. On starting a programming stage, two basic difficulties inherent to the proposed scheme arised as evident. In first place, the amplitude and complexity of the contents to be treated made the development in a sole text not very convenient. On the other hand, the interdisciplinary character and the reference to the different areas of knowledge required the cooperation of different specialists.

Thus, the decision to prepare a set of materials was taken, each one of them dedicated to a specific area, entrusting the making of the preliminary texts to specialists of the region with wide experience in bilingual educational projects and in indigenous areas.

The start off

The first task consisted in the identification of the thematic areas in which every teacher who works in an indigenous area must have an appropriate knowledge in order to carry out successfully his educational work. Without reducing importance to other subjects, five basic subjects were chosen: culture, language, curriculum, the bilingual education methodology and the indigenous adult population alphabetization.

It was also established that the texts should form an articulated set on one hand and on the other, that each one of them should have certain autonomy with respect to the other to permit its reading, study and independent use of the other ones, keeping as a communicative string the application of the disciplinary contributions more directly related with the bilingual intercultural education manner to the educational work.

The available resources and the existing necessities made it necessary to restrict the foreseen activities to two specific subregions: the Andean one and the Central American one, establishing as a main objective the elaboration of an aid material set destined to the teachers' and technicians' training and qualification in bilingual intercultural education, as a complement of the ones made and used in countries in which programs or projects of this kind are being carried out.

Due to the initial essence of these programs in Central America, it was decided to entrust a preliminary version of the texts to competent specialists that have participated in the many experiences carried out in this field since many years in the Andean region. It is convenient to insist once more on the implicit challenges in making the texts that the specialists in charge have had to face.

As it was already pointed out, it was necessary to consider to priority the characteristics of the future users of materials, certainly much different from those of an academic or scientific audience: generally, users without a solid training basis, with little developed reading habits, encouraged by real educational demands, allien to the subtle theoretical debates and to the technical sophistication's high standards. So from a formal point of view the basic requirement has been to associate the scientism and the contents' relevance with the language's simplicity used for its presentation: as an example, a criterion that has been as possible intended to keep, has been to place in front of its technical definition and theoretical analysis, the description of a determined phenomenon and its illustration through real examples taken from different contexts of the region.

On the other hand, it had to be rescued and selected from the great quantity of knowledges and concrete experiences those significant and useful elements for the teaching activity, taking into account the manufactured instruments' practical aspect and not only its training function, as that of giving theoretical notions to widen the reader's knowledge.

Finally, it has been necessary to take into account the global context where the texts will be used, for example avoiding a repeated insistence of inherent problematic aspects of a specific situation trying to locate them in a wider view. Actually, undoubtedly in the Andean context it is important to examine carefully and to come to a decision about the Quechua's vocalic sounds - particularly, whether they are 3 or 5, since to choose one or other position determines a whole series of consequences in the educational activity. However, it is a marginal matter in the Meso-American or amazonic context, exception done due to its general content: the importance of an exhaustive analysis of an indigenous language's sounds and the necessity to standardize the criteria for its description and transcription.

Once established these general guidelines as a whole to the specialists and starting with the elaboration task of the primary materials' version, a solution to the matters that were still pending was intended to be found; particularly, the definition of the necessary activities in order to be able to appreciate the relevancy of the proposed contents and its adequate treatment.

To restrict the undertaken task to the specialists ambit only did not seem suitable, leaving aside the possible contributions of the indigenous teacher's experience and creativity that without doubt could offer.

Neither it was deemed convenient to only consider the future user's texts characteristics without also considering their opinion about them.

Therefore, in order to analyze and improve the manufactured materials it was decided to resort to indigenous teachers and technicians'

89

aid, through the putting into effect of a sequence of workshops in different countries of the two selected subregions.

The actions

It is convenient to make clear that the aim of the workshops has not been to make valid or adapt the materials, since this would have had little congruence with the up to now pointed out criteria or with the available time. The objective of these events has been to collect every advice, proposition and observation in order to improve and make more attainable the content as much as the writing of each text, including in them every real significant example taken from the different contexts in order to illustrate appropriately the wide range of treated contents.

Due to its specific character, these activities could be defined as Reading and Revision Workshops: the work has basically consisted in critically read and analyze the materials putting forward suggestions and propositions for their revision.

For this purpose, a work dynamic and common patterns were presented, carrying out this task by groups, each one dedicated to read and discuss the content of a text and interchanging impressions and results through plenary sessions. Some instruments in order to facilitate and help this work were also available; an informative document about the projects' objectives and the aim of the workshop; a guide for the material's analysis with some instructions to guide the reading; and a guide for the specific discussion of each text suggesting elements to be treated during the plenary sessions.

It is important to stress, in a certain way the new aspects implicit in this attempt. On one hand it is unfrequent that the future users of a text done by a highly especilized professional may read it before its publication and by thus saying, to put hand in them. It is neither easy for a professional be volunteer to participate in a process of such nature that in the perspective, is headed towards a collective and interdisciplinary production of knowledges and instruments.

In second place, it is not a common habit among the teachers to read critically and analyze the didactical materials' content expressing their opinions regarding the matter; it is even more rare to consider those opinions. Generally, the common reading practice among the teachers is linked with what they have to learn (training and professionalization contents), to carry out (counseling, plans, guidelines) or to impart (contents, programs, subjects) with this there is little space for what they can create and put forward leaning on their experience.

The Reading and Revision Workshops had the participation of in-service indigenous teachers, technicians of local and central level involved in bilingual education programs and indigenous students of normal schools or training institutes .

These activities were carrried out in the following countries: Bolivia, in cooperation with the Rural Education Departmental Administration; Peru, with the help of National Altiplanic University; Costa Rica, together with the National Counseling in Indigenous Education; Guatemala, in cooperation with the National Bilingual Education Program;and Nicaragua, in collaboration with the Bicultural Bilingual Education Project for the Atlantic Coast.

It was not possible to analyze every text in each country, but a great part of them in each context and its entirety in the events as a whole. The workshops carried out in Central America allowed to prove the treated content's relevance -as it will be remembered, the materials have been worked out by specialists with work experience mainly in the andean region- and with the purpose of enlighting them with illustrative examples taken from the subregion's context, integrating them with those of the Andean zone diffusely mentioned.

Generally and besides the revision and critical analysis the reactions have been essentially positive. It was observed that probably in no country texts with these characteristics are available, embracing great quantity of the basic subjects related with educational problems of the continent's indigenous people. It was considered that to have the future text users previously taken into account has been a co-rrect and new way of carrying out an activity of this kind which, on the other hand fills an obvious gap.

The used language was judged as simple and attainable even in the most complex and difficult subjects, dealt in a clear and stimulating way. The materials were considered to be full of interesting and suggesting contents, well worked out and conceived, very related with the current indigenous situation. It was also pointed out that they are very useful and encouraging instruments at different levels; in the very workshops many thoughts about the local situations were produced, giving a series of important indications for the job and reinforcing the conviction that the teacher's experience and creativity can furnish important contributions that have to be taken into account.

Subsequently to the workshops, the final revision of the materials has been accomplished, mainly considering the suggestions, propositions and indications collected during these activities. It has been intended to maintain certain homogeneity in the basic concept's definitions and a uniform criterion regarding the display of content. A glossary has been included at the end of each chapter, where technical definitions and specific aspects that hardly can be found in a dictionary are treated again; a guide for evaluation, where some questions about most important discussed aspects were formulated and whose objective is not merely to introduce a grading instrument but an aid to stress some contents and guide the reader; and a guide for the research, whose aim is to suggest some practical activities that can be carried out in connection with the content of the read chapter.

In spite of having kept the autonomy of each text regarding the others, as a whole they conform a series which responds to a certain inward logic. In the first one, the study purpose is culture in its many components and manifestations -one of which is language-, with a particular emphasis on the acquisition, transmission and knowledges'production processes, as well as in the change dynamics. The second one develops the language subject and, in a more specific way; of language in situations of bilingualism and in an educational perspective. The third one considers the curriculum in general, giving examples of how the proper indigenous culture's knowledge could be incorporated in an intercultural dimension. In the fourth one the bilingual educational methodology is treated, that is to say, the planning of activities in the classroom in connection with the languages'subjects. The last text centers the attention on the literacy campaign problem among the adult indigenous population (See indexes of the texts in the annex).

As it can be seen the series starts from a cultural and language analysis, orientating the application of these contents towards the classroom and the non formal education.

Limitations and Perspectives

The final version of the materials can be considered as the result of a common and shared task conducted to the level of different countries, and it reflects great richness of existing experiences and knowledges.

Due to time and resources limitations it was not possible to examine with the specialists the results of the texts'revision and to consult them on the introduced variations and modifications.

In the same way, the absence of countries like Colombia, Ecuador, Mexico, Panama and Venezuela will have been noticed -where bilingual intercultural educational programs are being implemented-in the unfolding of this experience: obviously, the contributions which could have been obtained in these contexts would have constituted a valuable contribution to improve the texts. Notwithstanding, these actions can be considered in the future and once the materials'validity and usefulness is verified some country will be able to decide to undertake it on its own initiative.

The materials's characteristic as aid instruments is something on which it is better to insist. They can be useful to several purposes and be used in numerous levels, but in any case can they substitute the didactical resources elaborated on the characteristics, requirements and specific needs of a determined situation; at most they can complement and reinforce them or be used as a guiding pattern for the suitable material production in the case that they were not available yet.

The collected opinions during the workshops, form a wide available option span about its possible use: as consultive materials for teachers, as help for technical aquipment at a zone and regional level; as resource for teaching training, after a proper dosification of the contents and of the necessary adjustments to the curriculum; as specific training units, properly enriched by educational set, activities and tasks to be fulfilled; like methodological counseling for the teams in charge of the teaching training; etc. These suggestions could reinforce the conviction that the materials are sufficiently flexible, opened, capable of multiple uses according to a specific context's demands. In fact that they posses the basic indispensable characteristics so they may be used in different countries in spite of having been produced and thought from a regional level. There are no precedents to compare the product of this effort with, which has been conducted at regional level with the participation of so many teachers, specialists, technicians and students, much of the indigenous people. It is neither the moment to evaluate the results of an activity whose fundamental aim has been to offer a starting pont, a minimal foundation on which to be able to begin facing the task of how to resolve the detected lacks and through which instruments and actions. Obviously, only the utilization of the materials will allow to establish how much and how can they be improved or complemented and the most suitable modalities in order to profitably make use of them.

In the mean time during 1988 the OREALC will try to support some experiences of organization of courses for the teaching training in intercultural bilingual education, centering the actions at a trainer's level and at the innovating manufacturing plans which include the use of specific materials as much as the curricula's renewal for the training of teachers that work at indigenous areas.

Annex
INDEX OF THE TEXTS

CULTURE. Author of the base text: Emanuele Amodio, Venezuelan Institute of Scientific Research, Venezuela.

Introduction

Culture. Definitions and Functions.

- Importance of culture
- Arrangement of culture
- Action and transformation of culture

Production, participation and transmission of culture.

Territory, group and social interaction

Family, descent and relationship

Social control and power

Production, interchange and consumption

Communication and language

Thoughts, myths and reality

- Cultural knowledge
- World order and religion
- Health and indigenous medicine

Transformation of culture

- Cultural change and conquest
- Kind of contact
- Change agents
- General effects due to contact in the national society
- Result of contact in some cultural ambits
    - Economy
    - Social organization and power
    - Religion and mythology

Conclusions: the school and the indigenous cultures

LANGUAGE: Author of the base text: Luis Enrique Lopez, National University of the Altiplano, Peru.

Introduction

Nature of language

- Characteristics of language
    - Language is human
    - Language is systematic
    - Language is a system of systems
    - Language is creative
    - Language is symbolic
    - Language is knowledge
    - Language is culture
    - Language describes and makes up reality
    - Language is social
- Language
- Speech
- Spoken and written language

The study of language

- Phonological level
- Morphological level
- Syntactical level
- Semantic level
- The pragmatic level

Language and the individual

- Acquisition of the mother tongue
- Development of bilingualism
- The learning process of the second language

Language and power

- The power that emanates from language
- Language: a matter of power
- From the political conflict to the linguistic conflict
- Politics and linguistic planification

Language in use

- Variability of language
- Language and its changes
    - Language and region
    - Language and social organization
    - Language and social process
- Language and dialect
- Language, action and occupation

Language and education.

- A conception of education
- The role of language in the new school
- The teaching of the mother tongue
- Teaching of the second language
- The use of mother and second languages in the education

Conclusion: written language and schooling in bilingual contexts.

COMMUNITY, SCHOOL AND CURRICULUM Author of the base text: Luís O. Montaluisa Chasiquiza, Ecuadorian Indigenous' Nationalities Confederation (CONAIE) Ecuador.

Introduction

Community and school

- The community and the school
- The community and the bilingual school
- The participation of the community in the elaboration of the curriculum and in the determination of the educational policy

The indigenous knowledges regarding nature.

- Community-nature relation
- Temporal-space relation
- Ordering categories of nature
- The development of the individual

The indigenous knowledge regarding social interaction.

- Social relations
- History

- Regarding Territory

The mathematical knowledges in the indigenous cultures.

- Numbering system
- Estimative instruments
- The estimation of the illiterates
- Other courses of action
- The challenge of the mathematic teaching in education

Artistic and practical activities in the indigenous cultures.

- The arts and handicraft
- The technology

Languages

- Bilingual education
- Characteristics of the indigenous languages
- Main areas of interference between indigenous languages and Spanish
- Linguistic strategies

Towards an integrated curriculum

- The integrated curriculum
- The communitarian education

BILINGUAL EDUCATION. Author of the base text: Madeleine Zuñiga Castillo, Major National University of San Marcos, Perú.

Introduction

Bilingual Education

- Definitions
- Contexts
  - Context A
  - Context B
  - Context C
  - Context D
  - Context E
- Models
- Strategies

Linguistic abilities

- Receptive and productive abilities
- Handling of linguistic abilities at the beginning of the schooling
- Linguistic objectives of the bilingual education

The acquisition of the first and the Second language

- Learning process and acquisition of a language
- Communication as an ultimate aim in any learning-teaching process of a language

The use of the mother tongue in the bilingual education

- Development of L1 at an individual and social level
- Patterns for the development of oral comprehension and expression in L1
  - New linguistic behaviors
  - Language for daily life and the school
  - Oral expression development's aims in L1
  - Oral expression exercises in mother tongue
- Literacy in mother tongue
  - Conditions in order to learn to read
    - The choice of a reading method
    - Teaching objectives in reading in the primary level
    - The teaching of writing
- The use of L1 in other educational areas

The teaching of Spanish as a second language

- The importance of a method in order to teach L2
- The teaching of Spanish pronunciation
  - Foundations
  - Procedure
  - Grading of difficulties
  - Practice lenght of pronunciation
- General methodology counseling for the teaching of oral Spanish
  - The selection of subjects
  - Steps in the teaching of oral Spanish
- The reading-writing in L2
  - The transfer of the reading-writing ability from L1 to L2
  - The written comprehension and Production development in L2
- The use of L2 in the teaching-learning process of the curricula contents.

The grammatical analysis and the evaluation of L1 and L2 in the bilingual primary cycle

- The grammatical analysis of L1 and L2
  - To analyze, not to define grammar
  - When and what to teach in grammar

The language's area evaluation in a bilingual education program

LITERACY. Author of the base text: Jorge Rivera Pizarro, Bolivia

Let us read our reality

- Why are there illiterates in our America?
- Why are the indigenous people illiterate?
- What does it mean to be illiterate?
- Why learn to read and write?
- How to know how many illiterates they are in our communities?
  Three kinds of Literacy
- To make oneself literate in order to vanish
- To make oneself literate in order to integrate oneself
- To make oneself literate to be ourselves

The indigenous people think and express themselves on their education

- The proposals of the indigenous people
- The gathered experiences

A new literacy

- A literacy starting from the indigenous culture
- A literacy in the mother tongue
- A literacy within the history of each nation
- A literacy linked to the economy and labor
- A literacy guaranteeing the participation of the community
- A literacy looking towards the making of a better future for everyone

How to make literate.

- To organize the literate groups
- To choose a method
- To use cards, pictures and notebooks
- To follow the steps for the learning of reading
- To follow the steps for the learning of writing
- To act in front of a group of adults
- To evaluate the activities

And the people that already know how to read?

- Shows of popular education
- Literature for the indigenous peoples
    - An important principle: to write more than to read
    - The popular press and the home-made mimeograph
      How to make our newspaper?
      How to print our newspaper?
    - To write our knowledge and wisdom
- Reading contests.

OREALC ACTIVITIES

REGIONAL NETWORK FOR TRAINING, INNOVATION AND RESEARCH IN THE FIELDS OF PLANNING AND ADMINISTRATION OF BASIC EDUCATION AND LITERACY PROGRAMS -REPLAD-

I. FORMATION AND TRAINING

Training Projects in progress

- **Central America and Panama**
  Activities in the six countries of the sub-region are being carried on within the "Distance Training Project on Planning, Administration and Supervision of those responsible for Basic Education and Literacy Programs at a local level". In Costa Rica, after choosing and visiting the areas which would be benefited from this project (Los Santos, San Carlos, Heredia, Coto and Limón), the next step was to elaborate the module on national reality, the trainees were selected (175 in all) and those in charge of giving the Course were identified and trained therefore. After handing over to the beneficiaries the study papers corresponding to the first period, on March 19th, 1988, their training process started.
  In Guatemala, training is being provided since October 16th, 1987, in the districts of Izabal, Huehuetenango and San Marcos. Therefrom, 134 district supervisors, municipal coordinators and basic school principals are benefited, in the first instance.
  The systematic evaluation which has been made since the beginning of the project enables to identify any limitations that there may be, and overcome them. A detailed report on the Project's evolution in the six countries of the sub-region will be inserted in the next Bulletin.

- **Honduras**
  A "Training Seminar-Workshop on the Participative Approach in Planning, Management and Evaluation of Adult Education" took place in Tegucigalpa, between February 15th and 19th, 1988, and was organized by the General Directorate of Literacy and Adult Education. A total of 113 members of the administrative staff, supervisors and promoters of this General Directorate took part in it.
  The above Workshop's specific purposes were to spread shared planning techniques, motivate the staff in order to promote the involvement of the community in the design, development and implementation of the Programs for which such Directorate is responsible and to identify the main characteristics of the evaluating process regarding programs of adult education prepared and implemented with the participation of others. Besides this Workshop, and to support the training provided to the relevant staff, the General Directorate of Literacy and Adult Education prepared a document entitled "The Participative Approach in Planning, Management and Evaluation of Adult Education".

- **Uruguay**
  The Instituto Magisterial Superior (IMS) has implemented, this year, the first training course involving partial attendance, at level of basic education for middle-rank leaders, mainly zone inspectors. Such

plan comprises the whole country and, although it is experimental, it has been implemented in all districts, in view of the feasibility study carried out, which enabled to identify human, financial and material resources adequate for putting it into practice. No pilot experience was made due to the urgent need to support training and the indispensable competence of Zone Inspectors to be able to carry out their duties properly, the schooling reality and the job performed by the teaching centre, at an internal level and with regard to the community. The REPLAD Modules promoted this initiative. According to what is stated in the report received from Uruguay, "this experiment is highly valuable, not only for its development in itself, but because it helps to eliminate those rigid mental patterns which only accept actions within the conventional frame". The results achieved are so important that the competent authorities have decided to establish a similar working pattern for in-service training of pre-school teachers.

II. DIDACTIC MATERIAL

Updating of Materials

The DAPE (Universidad del Valle, Cali, Colombia) and the Instituto Magisterial Superior (IMS) (Uruguay), as well as those Central American Institutions who are participating in the "Distance Training Project on Planning, Administration and Supervision of those Responsible for Basic Education and Literacy Programs at a Local Level", have sent to OREALC valuable comments, suggestions and recommendations regarding the materials which form part of the Self-Instructional Package for Distance Training of Educational Administrators and Planners at a Local Level. The above will be included in the preparation of the third issue of said Package.

Preparation of New Materials

After initiating the Project named "Exchange and Cooperation for Training Teachers in Educational Planning and Administration", and once the contents of this training were determined, the next step under way now is the identification, collection and preparation of the materials which will be used in this framework. Several REPLAD member Institutions and specialists from various International Organizations are taking part in this task.

III. HORIZONTAL COOPERATION BETWEEN REPLAD'S MEMBER INSTITUTIONS

The Intituto Magisterial Superior -IMS- (Uruguay)/Instituto Centroamericano de Administración y Supervisión de la Educación -ICASE- (Central American Institute for Educational Administration and Supervision) (Panama).

January/February, 1988

During her visit to ICASE, the IMS's pre-school education specialist, Susana Balay de Arostegui, assisted the Institute in the design and development of a Course on Pre-School Education Special Didactic Strategies, as a distance education alternative aimed at training teachers of this level and supported the design of a Pre-School Centre Administration Handbook which had been requested by the Regional Network for Training, Innovation and Research in Planning and Administration of Basic Education and the REPLAD Literacy Programs.

Universidad de Brasilia - UNB- (Brazil)/Consejo Federal de Inversiones -CFI- (Federal Investments Council) (Argentina)

February 16th to 26th, 1988

The visit made by Stella Trois, professor of the Educational Planning and Administration Department of the UNB to the Federal Investments Council (Argentina) allowed an exchange of experiences between both institutions in the field of educational planning and innovations, within the scope of an educational reality which is undergoing a decentralization and regionalization process.

Furthermore, it gave the opportunity to evaluate the regionalization project by helping to systematize the information gathered through experience, the present state of affairs and the new outlook for this field. In this context, the visit made by the Brazilian specialist to Concarán, First Educational and Cultural Region of the province of San Luis, was particularly fruitful. Therein, an interesting regionalization and educational nuclearization experiment is taking place.

Consejo Federal de Inversiones -CFI- (Argentina)/ Universidad de Brasilia - UNB- (Brazil)

May 16th to 25th, 1988

To reciprocate the visit made by Stella Trois to Argentina, Mrs. María del Carman Chada de Santagata, professor of Universidad Nacional de San Luis (Argentina) and Coordinator of the Special Regionalization and Educational Nuclearization Program Nº 1, of the Province of San Luis -cosponsored by the CFI- travelled to Brazilia on the dates indicated herein. The purpose of her visit was to become acquainted -thanks to UNB's support- the Brazilian experience regarding methodologies for evaluating social and educational projects as well as project related to the training of school administrators.

Caribbean Educational Innovative Network for Development -CARNEID- (Anglophone Caribbean)/ Centro de Administración de Educación -CAE- (Educational Administration Centre) (Chile).

Cooperation links between Centro de Administración Educacional (CAE) pertaining to Universidad de Concepción (Chile) and the Caribbean Educational Innovative Network for Development (CARNEID), which comprises 18 Caribbean countries, began during the course of the Second Technical Meeting of REPLAD's Regional Network held in San José, Costa Rica, between November 2nd and 7th, 1986.

The following were determined as main goals of this cooperation: to exchange experiences between the anglophone Caribbean institutions and Latin American institutions in the field of educational administration and, to develop a study tour between anglophone Caribbean institutions and Universidad de Concepción's CAE.

The short and mediumterm work plan involves: the application of a poll to inquire about the needs of training planners and administrators in the Caribbean English-speaking countries; providing support to prepare a comprehensive assistance program to four countries that are undergoing critical problems concerning educational administration; and having an exchange of specialists.

Between December 3rd and 6th, 1987, CARNEID's Coordinator, Hubert Charles, visited the CAE in order to discuss and analyse the different alternatives for reciprocal cooperation and the strategies aimed at successfully implementing the policies agreed upon by both institutions in the field of educational administration, planning and supervision. Furthermore, he took part in a Seminar-Workshop organized by the CAE in Catillo, where the new strategies for training educational administrators and teachers' education within the framework of REPLAD's Regional Network were discussed. National known specialists attended this Seminar, all of them belonged to the national REPLAD's Network member institutions coordinated by the CAE. On this occasion, a Chart of Intentions was subscribed between both institutions, which contemplates the following: CAE's cooperation in the survey of needs which CARNEID's Member States are presenting in the field of educational administration; the establishment of a CAE's mission in the Caribbean in order to contribute in the process of identification of subregional adequate conditions for training educational administrators; to conduct a Workshop on programming the training of administrators, once requirements have been determined, that would count with the participation of CARNEID's Member States; and to select five countries in charge of training educational administrators through a Pilot Project that will allow to explore the possibility of using the Package of REPLAD's Self-Instructional Materials within a distance methodological approach.

The implementation of the Agreements of Catillo began with the remittance to Barbados, CARNEID's headquarters, of the questionnaire of the survey on needs in three languages (English, French and Spanish). The foregoing questionnaire will be given to educational directors (potential students of the training programs agreed upon) of CARNEID's member countries.

Between March 28th and March 30th, 1988, a Meeting of CARNEID's Work Force was held in Port of Spain, Trinidad. An important item of the agenda was the implementation of the agreements contained in the Chart of Intentions signed between CAE and CARNEID. For this same reason, the National Coordinators of the Caribbean countries held a Consultative Meeting in St. Maarten (West Indies) between May 9th and 13th, 1988. A CAE's specialist attended this conference in order to analyse the progress made in the joint activities agreed upon.

The Fourth Caribbean Consultative Meeting organized by CARNEID/UNESCO, was held between May 9th and 13th, 1988 in St. Maarten, West Indies. The Caribbean countries Associated Centres and CARNEID members participated in this meeting, as well as the director of Centro de Administración Educacional -CAE- of the Universidad de Concepción, Mr. Jorge Jiménez Espinoza, as a special guest. An important item of the Agenda, which was indeed a subject of debate at the Meeting in St. Maarten, was the area involving the programming of formulation and implementation of educational policies, particularly in matters and activities dealing with educational planning and administration. A subject which was carefully analysed was CAE's role and participation in the framework of REPLAD's Regional Network, in supporting to the activities foreseen by CARNEID within this field, for the 1988/89 bienium.

The following are some of the activities analysed on this occasion, in the field of CAE/CARNEID mutual interest:

- Seminar for Directors of Educational Centres on the use of the computer as a management instrument.
- REPLAD Subregional Seminar

- Generation of Educational Development Plans
- Analysis of educational requirements.

As a result of CAE's participation in the fourth Consultative Caribbean Meeting, the following concrete activities to be accomplished in 1988 were agreed upon: a) identification, by CARNEID, of Caribbean institutions participating in the Reciprocal Collaboration Program supported by the CAE, to be carried out both in Concepción as in other centres in the Caribbean; b) visit of Professor Ewart Taylor, from the University of West Indies (Campus St. Augustine, Trinidad) to Concepción, between May 23rd and 28th, 1988, in order to become acquainted with the distance training strategies for educational administrators and planners developed by the CAE (Universidad de Concepción); c) printing, by the CAE, of a book containing selected works within CARNEID's field of activity, both in English and in Spanish; d) study tours of CARNEID's national coordinators to the CAE during the second semester of 1988.

IV. SURVEYS AND RESEARCH WORK

Research on the impact of literacy programs in Bolivia, Ecuador, Honduras, Dominican Republic and Panama.

SENALEP (Bolivia), DINACAPED (Ecuador), the General Directorate of Adult Education (Honduras), the National Directorate of Educational Planning (Panama) and the Special Citizen Education Program (PEED) (Dominican Republic), all of them members of the REPLAD Network, have already prepared the preliminary reports of this research, which have been analysed and discussed in an Operational Workshop held in Universidad de Monterrey (Mexico), between May 16th and 18th, 1988. This workshop, which has constituted the sole opportunity to favour an exchange of experiences in research among the participants, on the basis of the results produced and of the use of the methodology adopted, has also facilitated the feedback to consolidate the final report on research which is expected to be in circulation soon.

V. PUBLICATIONS

Characterization of the Educational Planners and Administrators Training Institutions and Profile of the training of Trainers. Preliminary Version prepared by Silvia N. de Senén González. OREALC, Chile, March, 1988.

The above document was prepared as work material for the workshop on Design of Programs for Training of trainers in Educational Planning and Administration in Latin America and the Caribbean, held between April 11th and 22nd, 1988 in Madrid (Spain).

The First Part involves the task of characterizing the Institutions and Programs which are members of the REPLAD Network in nine countries of the region. In each one of them, a description is given of their background, peculiar characteristics, enrollment, teachers staff, contents and other elements which contribute to the educational process, as well as the role played by REPLAD and the national networks. Likewise, an evaluation is made of future prospects for each Institution or Program. The activities carried out by the institutions are aimed at a diversified group of clients: students, graduates, in-service staff in the educational planning and administration state areas and professionals from the private sector.

The Second Part intends to make an adjustment of the profile of the teachers trainer. The latter category is understood as an activity both institutional and personal, which outstands for its heterogeneity and variety of characteristics that give to it a particular identity. However, there are elements and features which are common. It will be necessary first to take into consideration the heterogeneity and diversity which originate from the local, national and regional reality, in order to convert planning and administration into transformation and democratization tools to be used in the educational systems.

Other publications by the REPLAD Network

During the first months of this year, OREALC also published "Training of trainers in educational Planning and Administration, Final Report of REPLAD's Technical Meeting". (Campinas, Brazil -November 9th to 13th, 1987). The latter is a work that compiles the suggestions and recommendations made at the Meeting regarding the set up of a Regional Project of Training of trainers in Educational Planning and Administration, which includes, in an attachment, the Draft Document prepared on this occasion; and "REPLAD's Regional Network. Activities accomplished during 1987: Evaluation, prospects", prepared by Carlos R. Velasco B., containing a detailed report of the activities carried out during the aforementioned year by REPLAD Network and financed by the Government of Spain (regional meetings and events; training; training of trainers; establishment of National Networks; preparation of didactic material; surveys and research work; horizontal cooperation activities; publications and documents).

Two other publications will be issued soon: "Study on Dropout and Retention in Literacy Programs in Bolivia, Honduras and the Dominican

Republic" and "Literacy Alternatives in Latin America and the Caribbean", the latter resulting from a shared activity accomplished by REPLAD/REDALF's Networks.

VI. NATIONAL NETWORKS FOR EXCHANGE AND COOPERATION IN EDUCATIONAL PLANNING AND ADMINISTRATION

Colombia

Between April 18th and 21st, 1988, a National Seminar-Workshop was held in Cali (Colombia), organized by Universidad del Valle, for the establishment of the Colombian REPLADCO Network for Exchange and Cooperation.

Employees of the Sectional Educational Secretariats who are responsible for the planning, execution, coordination and evaluation of the training provided to local educational planners and administrators, as well as clerks of the regionals of the Pilot Experimental Centres in charge of coordinating the training process, professors from the Faculties of Education involved in educational plans or programs for training educational administrators, supervisors and planners, and employees of SENA in charge of imparting professional training.

The above event was a propitious moment for reflecting on the training to be imparted, by becoming acquainted with and discussing the research work done in accordance with the government policy regarding training in educational administration and planning at a local level.

The meeting achieved its main goal of establishing the REPLADCO National Network and implementing the "National Distance Training Plan for Educational Administrators and Planners in Marginal Areas". From this point of view, the participating institutions take the responsibility to form sectional training teams and ensure the Project's accomplishment and follow-up.

VII. TRAINING OF TRAINERS IN EDUCATIONAL PLANNING AND ADMINISTRATION.

Workshop for designing Programs of Training of Trainers in Educational Planning and Administration in Latin America and the Caribbean.

The Workshop for designing Programs of Training of trainers in Educational Planning and Administration in Latin America and the Caribbean was held in Madrid (Spain) between April 11th and 22nd, 1988, organized by UNESCO Regional Office for Education in Latin America and the Caribbean (OREALC) and sponsored by the Ministry of Education and Science of Spain and the Organization of Ibero American States for Education, Science and Culture -OEI-.

The abovementioned Workshop is the starting point of the task entrusted to OREALC by the Board of the Intergovernmental Committee in charge of the Major Project in the field of Education for Latin America and the Caribbean as regards the set up of a project tending to give training, as soon as possible, in educational planning and administration consistent with the new social, political and economic realities of the region.

The Workshop was inaugurated at the OEI's headquarters with the attendance of important officers of the Spanish Government, legislators, diplomats, OEI's authorities, employees of specialized organisms belonging to the UN System and specialists from Argentina, Brazil, Colombia, Costa Rica, Chile, Mexico and Venezuela, on behalf of government institutions and of public and private universities members of the REPLAD Network.

OEI's Secretary General, Simón Romero Lozano, welcomed the participants, stressing the importance of the activity which favours a more intense exchange between the OEI and UNESCO. OREALC's Director, Juan Carlos Tedesco stood out the fulfilment of the Workshop, pointing out that it was the fruit of joint personal, institutional, national, regional and international efforts based on the cooperation provided by the Government of Spain to the Major Project. The Under Secretary of Education and Science of Spain, Joaquín Arango Vila-Belda, expressed the interest of his country in promoting actions tending to strengthen its historical links and its social, cultural and political identity with other countries.

The Workshop's agenda included an initial Round Table on "Social and Economic Crisis and the outlook of education in Latin America and the Caribbean", the purpose of which was to analyse the crisis that is presently affecting the countries of the region, and to evaluate its consequences on the educational processes, particularly in relation to the training of trainers. The Round Table was held in the Ballroom of the Scientific Research Higher Council, with the attendance of a well-known group of experts and was coordinated by the Technical Secretary General of the Ministry of Education and Science of Spain, Enrique Guerrero Salom.

Among the topics dealt with in the above Round Table, the following are worth mentioning:

- Increasing financial restrictions which, as of 1980, are affecting the public sector and have strong impact over the field of education.
- The state of affairs of higher education and its

impact on the creation of regional charts.

- The dramatic situation which afflicts 40 million of Latin Americans excluded from the educational system.
- The international cooperation policy in the field of education in times of crisis, which should be based on patterns of solidarity.

In the discussions of the panel following the Round Table, the incidence of social and economic factors on educational planning and management was analysed from various points of view. Thus, an analysis was made of the relationship between employment and salaries uncertainty and the greater division between a modernizing sector and traditional sectors as a challenge of the educational system to face the social demands that emerge from this situation. Warnings were given regarding the increasing segmentation and the subsequent emergence of elite educational circuits for high social classes and emphasis was put on the need to consider development as a global phenomenon which must be confronted from a multidisciplinary point of view. Furthermore, the participants insisted on the usefulness of facing social planners to a critical discussion about the concept of development, subjecting themselves to an analysis of the options presented by the short and long-term economic policies, and of carrying out a critical evaluation of the concept of planning and of the practical experiences undergone in this field since the beginning of the 60's. The role of mediator of the educational planner within a democratic context was analysed in detail.

At a plenary meeting, the group forming the Workshop raised the topic of devaluation which is affecting educational planning in the region, pointing out the need of identifying new actors to take part in the planning processes, to work out mechanisms and methods of participation of those actors, to move from quantitative indicators to programming and implementation of concrete actions, to place themselves and act in situations of uncertainty wherein contingency prevails, and to link the planner with the administrator and both of them with political decision-makers.

At the request of the Workshop, those participating in the Round Table developed, as a suggestion, a module for the first week of the Training of Trainers Course which involves a global view of the context and its main problems: social inequality, employment uncertainty, weakening of the State's management capacity, financial restrictions and their effects on the functioning of the public sector.

Prior to the Workshop, OREALC requested the participants to prepare a study that would analyse the planning, management and supervision processes in the different educational levels and jurisdictional fields of each country. This report would allow to identify the different types of personnel involved in those activities and their characteristics and training needs. The participants then submitted to the Plenary, the results of those studies, stressing on the presence of certain problems in common, as well as the search for new planning and management methods which would allow more participation and decentralization.

Once the typification of the educational planning and management processes was made, the Workshop group agreed to form national work team to discuss the topic of training according to the reality of each country, based on their training requirements.

The national groups then identified the target-groups who would be beneficiaries of the training, as well as of the knowledge and skills that they will have to acquire in order to achieve the training goals. Based on such requirements, it was possible determine the fields or areas of knowledge which make up the training contents and carefully prepare the projects for national courses. The results produced in this work reflect the heterogeneity of situations existing in the various countries of the region.

The plenary considered that the job done by the work groups had met the expectations, since it produced a set of projects for national training courses framed within the particular situation of each country and gave the possibility for a debate on the regional Course.

REPLAD'S Technical Meeting held in Campinas had already defined the purposes that this Regional Course would have, as well as the broad lines regarding the individuals involved and the training methods and contents.

In turn, the Madrid Workshop represents an important milestone in the design of the Regional Course carried out through a deductive and inductive process. The participants intensely lived this shared construction process, based on reflection, controversy, arrangement, construction and synthesis. Based on the foregoing, the Plenary agreed upon the fact that the Regional Course should consist in the following four Training Modules:

- Module 1. The educational perspectives in the face of social challenges in Latin America.
- Module 2. Analysis of the educational systems in Latin America.
- Module 3. Problems and challenges posed by information and research to planning and administration.

- Module 4. Educational planning and administration in present and future educational stages.

The contents of each module were prepared in detail within work groups formed by areas of common interest. The proposals made were presented and discussed at a plenary meeting, thus enabling to enrich and inter-relate the result submitted by the work groups, and subsequently, the document dealing with module contents was approved. Undoubtedly, the latter is an essential part of the Regional Course.

The Workshop strongly insisted on the fact that the Regional Course is an instrument for achieving the three goals envisaged in the Major Project, considering that planning and administration are the core in the operation and improvement of educational systems. Several participants defined the Regional Course as an exchange of experiences and an occasion for joint reflection among those taking part in a discussion, who contribute with their knowledge and practical experience, and as a dialectical process wherein dialogue serves as an instrument for becoming acquainted with and forming a new vision of the problems involved in planning and administration. This is indeed, a process of renewal and updating, directed towards restating old paradigms.

The technical approach must give way to a planning process oriented towards the understanding of political frames, administrative logics and situations of social, economic and political crisis.

It is deemed that the attendance of participants to the Course shall constitute an instance of the process of updating and renewal of knowledges that involves a previous and a latter stage. Among the tasks entrusted to the participants in the previous stage are selected readings using a specially prepared guide and the search for information to be used in the case study. The latter stage involves a follow-up by the participants in order to evaluate the impact of the Course in each country.

According to the specific purposes set up at the Meeting in Campinas, the Course should stimulate the generation of new knowledges. To this end, it is advisable to adopt a tendency towards discussion and critical analysis in the face of challenges posed by the crisis which affects the region. Along these lines, contents must be orientated towards a prospective exercise and to facilitate the design of new stages wherein education will be imparted.

On the other hand, active learning patterns, such as workshops, exercises for solving problems, simulation games, case studies, etc., will be incorporated into the training process.

Bearing in mind the extent of the fields of knowledge proposed for the course, the plenary showed its preference for an adequate balance between what is general and what is specific. The view being favoured tends to be global, although it accepts the specificity of the techniques that the participant must be acquainted with. At the same time, according to the group, the Course constitutes as a process of interrelationship between knowledges and experiences.

Finally, it was deemed necessary to review certain theoretical patterns which are considered to have been removed, in spite of the fact that the replacement theory is still under preparation. In view of the foregoing, it was suggested that, throughout the Course, two types of activities could be identified: one which would be more structured, based on solid knowledges, and another one, less structured, dealing with theories which are being reviewed or renovated.

Pilot Course for Training Ecuadorian Trainers

Among the institutional cooperation agreements established within the context of the REPLAD Network, the Ministry of Education of Ecuador (through DINACAPED) and Universidad de Concepción (through the CAE) agreed to carry out in Concepción (Chile) a Training Program for trainers in Educational Administration, Planning and Supervision aimed at training 9 Ecuadorian directives to act as multiplying elements when they returned to their country. The latter took place between October 24th, 1987 and January 28th, 1988 and consisted in regular academic activities such as: courses, workshops and seminars; implementation of a Degree Project to be accomplished in the country of origin, once the regular course in Concepción ended; and field observation visits and exchange of experiences with officers from the Ministerial Secretariats of Education, Provincial Directors, Department of Municipal Education and Chilean universities members of the national Network headed by the CAE, of Universidad de Concepción.

For a successful accomplishment of this inter-institutional collaboration project, the Educational Administration Centre -CAE- financed enrollment expenses, fees of the academicians, publications and supplementary material for teachers, besides all other expenses entailed in the use of the University's general facilities (health, cultural, etc.) In turn, the Ministry of Education of Ecuador and the Ecuadorian teachers paid for transport expenses (from and to Chile), accomodation expenses and food in Concepción. Finally, UNESCO helped to pay the expenses derived from field visits by those who participated in this Multinational Program.

The results produced from this interesting cooperation experience in the framework of REPLAD Regional Network have been extremely satisfactory. It is expected that the benefits will be spread in a multiplying effect, to those teachers/directors who are willing to receive training in Ecuador, through the Training Courses that will be implemented with the support of the Ministry of Education and of the Ecuadorian specialists who have been trained at the CAE. The main task will be carried out in four headquarters: Quito, Guayaquil, Cuenca and Ambato, cities that will constitute development enclaves for training educational administrators in Ecuador.

VIII. TRAINING EVALUATION

The Project of Distance Training for Educational Administrators in Central America and Panama bears the following distinctive features: a massive number of participants -1,138 persons enrolled and approximately 400 additional applicants; simultaneous presence in six countries: Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua and Panama; extended duration -planned on the basis of ten working months; amount of the financial resources involved in its preparation and operation; apart from its irreproachable valuable contribution in relation to the Major Project's goals. All the foregoing factors stimulated the development of a Plan for evaluating this Project, which was later on enhanced by the incorporation of supporting and follow-up elements, by means of "in situ" monitoring activities, taking into account the experimental nature of such activity.

The Evaluation Plan contemplated the fulfilment of the following objectives: a) to provide criteria that would allow to decide on the suitability, feasibility and potential effectiveness of such training activities as regards the goals of the Major Educational Project; b) to inform of the technical, pedagogical and formal quality of the materials provided for the program; c) to inform about the management process and regarding the role played by the participating institutional bodies; d) to show the results obtained in relation to the product generated, in terms of quality and quantity.

The Project's evaluative actions were set forth on the basis of a "pre-post" pattern which considered as main elements, the input, the process and the product, the latter being taken in terms of results.

The following were considered as inputs: a) the participants, identifying their most relevant personal and professional features, their entry behaviour with regard to the Course's contents and their opinions concerning educational problems in basic education and adult education; b) the Tutors, based on their personal and professional features; c) the materials, as far as their quality and functionality are concerned, taken from the point of view of Tutors and participants.

Concerning the process, it was recommended to determine the effectiveness of the Project's implementation strategies as well as that of the management mechanisms.

As far as the product is concerned, it was suggested to analyse the achievement of the training goals stated in the Draft Documents prepared by each participating country, and to detect, as well, the perceptions among users regarding the educational concept which is the core of the Major Project in Education.

The monitoring work consisted in offering technical cooperation to the National Committees who are responsible for the Project in each country, in relation to activities tending to promote and spread information on the Course, its implementation, the design of activities aimed at evaluating learning processes, the preparation of national materials and, in general, to collaborate in the search for technical and operational solutions.

The implementation of this Evaluation Plan is at present, in the following stage of progress:

- Two evaluation missions have been accomplished within the subregion during which, work has been done in the various countries, on the dates and places indicated herebelow:

  Costa Rica:
  On several occasions during the July/November, 1987 and March/May, 1988 periods.
  El Salvador:
  Between September 2nd and 10th, 1987
  Between April 18th and 23rd, 1988
  Guatemala:
  Between August 22nd and 28th, 1987
  Between April 4th and 16th, 1988
  Honduras:
  Between August 12nd and 21 st, 1987
  Between May 1st and 7th, 1988
  Nicaragua:
  Between October 13th and 21st, 1987
  Panama:
  Between September 23rd and October 2nd, 1987

During the course of development of such missions, national entities in charge of the Project's operation were supported, collaborating with their executives in different aspects and stages of its evolution; contact was made with the chief officers responsible in the main offices of the Ministries; each one of the headquarters where the Project is under operation was visited, thus allowing to get in touch directly with the participants and therefore, obtaining first-hand information on their perceptions and points of view with regard to the training process.

- The fulfilment of the various stages involved in the Evaluation Plan is in the following state of progress:
  - Identification of the population participating therein.
    Entry evaluations.
    There is information available for four countries (El Salvador, Guatemala, Honduras and Nicaragua). Information corresponding to Costa Rica, where activities were started in February, 1988, states that it is in the stage of reception; as far as Nicaragua is concerned, the local-level data have not yet been received.
  - Evaluation of the materials and regarding the process itself. The instruments involving such aspects are in the stage of application in the participating countries, and they ought to be received at the headquarters of UNESCO's Subregional Office during the month of June, 1988.
- The tabulation of data regarding 611 participants belonging to four countries -El Salvador, Guatemala, Honduras and Nicaragua- allows to identify an individual profile concerning the aspects indicated herebelow:

Sex: female 30% male 62%

Age: less than 25 years old: 7% between 25 and 40 years old: 64%; older than 40 years old: 29%.

Educational Level: teachers: 86%; non-teachers: 14%. With an academic degree: 10%; with no academic degree: 90%.

Field of Activity: Education for adults: 21%; basic education: 53%, secondary education: 3%; general administration: 23%.

Professional Management: managerial: 62%; technical: 23% supervision: 15%.

- The entry instruments applied to participants from four countries -El Salvador, Guatemala, Honduras and Nicaragua- showed the following results:

Knowledges: N: 588.
Highest Score: 68 points.
Range achieved: from 2 to 47 points.
Average pondered: 22.09 points.

Opinions: N: 571.
Lowest score: 15 points (traditionalist).
Highest score: 75 points (renewed).
Range achieved: between 32 and 72 points.
Average pondered: 50.7 points.

The above results enable to draw the following preliminary conclusions:

- The entry behaviours regarding the contents reflect the training requirements of the participating population in relation to aspects comprised in this Course.
- The opinions given by the participants show a moderately renewed attitude towards educational problems in their areas of activity.
- The analyses related to the technical quality of the instruments endorsed their internal consistency, showed and adequate amount of difficulty and a standard mistake consistent with the heterogeneity of the groups involved and the aspects taken into account in these measurements.

- The third stage of this Evaluation Plan foresees the drafting of a Report illustrating opinions regarding the materials, the process itself and the results obtained by the participants, in accordance with the guidelines which inspired their creation and application.

Project's Progress

Until now, 1.138 participants in the six countries of the subregion have enrolled, and accurate data corresponding to the local level in Nicaragua (approximately 400 persons) are still missing. All executive entities are at present, operating and consolidating their performance. The participants, in general, were working, during May, 1988, in Module Nº 3 of the Self-Instructional Materials Package; a small number of them had progressed on to Module Nº 5 and the rest were working in Module Nº 2. Dropouts reached 12% in some countries; however, the National Coordinators took steps in order to replace those dropouts with new registrations, thus maintaining the initial amount with minimum variations.

The problems which are affecting the subregion at present, although having delayed some operational elements, have not been an obstacle for the Project's development, in spite of certain understandable difficulties.

The opinions recorded during the field visits allowed to appreciate the excellent acceptance of the Project by the participants, as well as their evident satisfaction for the quality of the materials and their contents, all of which guarantees a satisfactory accomplishment of the activities planned within the course of this year.

REGIONAL NETWORK FOR FORMING, PERFECTING AND TRAINING EDUCATORS -PICPEMCE-

Bolivia

National Seminar-Workshop on Normal Education

(Santa Cruz, February 1st to 5th, 1988)

Within the frame of the activities supported by the PICPEMCE network, the above Seminar-Workshop was held in order to analyse the results of the national diagnosis regarding Normal Schools started in July, 1987 and to propose guidelines for restructuring the Subsystem.

The new design should allow to progress towards a solution of the problems detected, the implementation of national human resource development policies and to satisfy the legitimate aspirations of the teaching staff working at 28 Teacher Training Institutions. Directive staff from all normal schools, educational workers associations and employees of the Ministry of Education, particularly those who form part of the Technical Committee in charge of the diagnosis, participated in the above Seminar-Workshop.

The participants, after an extensive shared and democratic analysis of the results of the diagnosis and of the proposals made by the delegations, unanimously decided to consider reconverting the present Normal Education System into a State Pedagogical University under the authority of the Ministry of Education, on the basis of its human, material and economic resources. A proposition was made regarding the training of teaching staff at the Higher Technical level (3 years), Bachelor's degree (2 more years), Master and Doctorate in various specialities for the higher levels. Such proposition involves the need to provide intensive training and specialization to the present teaching staff in order to qualify them for assuming their professorhip in the higher levels before new careers are stated and the in-depth analysis, circulation and debate of the necessary previous surveys and research work, at Seminars and National Educational Congress.

The Ministry of Education approved the results of this second Seminar-Workshop on Normal Education and is taking steps towards implementing this Project within the frame of restructuring the Sector.

It is worth noting the high patriotic spirit of the Bolivian normal education teaching staff as well as that of their trade union representatives who have appreciated and given priority to the need of improving the teaching staff's academic level and that of its training institutions. The PICPEMCE Regional Network is at present technically supporting this Bolivian Project and promoting cooperation from the rest of the member countries and other Agencies.

Cuba

Incorporation into the PICPEMCE Network

Within the scope of a Seminar sponsored by PICPEMCE in February, 1988, held at the Educational Training Institute of Cojimar, that counted with the attendance of over 500 teachers from Pedagogical Schools, Pedagogical Institutes and Provincial and Municipal Educational Training Institutes of all countries, an Activity involving Information and Reflection on the Major Project in Education and its Action strategies was accomplished. At this Activity, a deep analysis was made of the network cooperation strategies, putting special emphasis on the PICPEMCE network. It is expected that this staff, engaged in training teachers and introducing innovations at school level throughout the whole national territory, will rapidly spread the information and ideas presented, among their colleagues.

Given the fact that the Cuban Educational System is endowed with institutionalized mechanisms for the handling, consolidation and acceptance of innovations, it is foreseen that the country will give the opportunity for employees of Institutions that are members of the network, to participate in specific courses, seminars and congress which are being programmed at present. On the other hand, Cuban officers have expressed their interest in becoming acquainted with the materials and innovating techniques in the field of improvement of teachers' training aimed at improving the quality of education. Exchanges are foreseen in areas such as research in the teachers' training institutions, development of creativity, graduates field follow-up, use of computers in education, etc.

The Coordinator of PICPEMCE in Cuba is the Directress of Formation and Training of Pedagogical Staff, Mrs. Magaly González Pires, of the Ministry of Education -La Habana.

Ecuador

Regional Seminar on Innovations in the Institutions for Training Teachers for Primary and Basic Levels.

(Quito, March 21st to 25th, 1988)

The above Seminar was organized by the PICPEMCE network and jointly sponsored by the OAS, the OEI and the Appropriate Technology Transfer Institute belonging to the "Andrés Bello" Agreement (ITACAB).

Officers responsible for training teachers in 19 countries: Argentina, Bolivia, Brazil, Colombia, Costa Rica, Cuba, Chile, Ecuador, El Salvador, Guatemala, Honduras, Mexico, Nicaragua, Panama, Paraguay, Peru, Dominican Republic, Uruguay and Venezuela participated in this Seminar, together with specialists of the OAS, the OEI, ITACAB, ICI and UNESCO.

The purposes of the Seminar were:

- to study the present challenges in relation to training collectively, within the scope of the Major Project in Education's objectives.
- to define trends for the innovation processes which shall be put under way by the various countries in order to respond appropriately to such challenges and propose guide-lines for a regional innovation plan for teachers' training aimed at stimulating mutual support between countries and among International Cooperation Agencies.
- to encourage and support the definition in each country, of those actions they may decide to incorporate into the National Action Plans within the scope of the aforementioned Regional Innovation Plan.

The Seminar, after listening to the presentations, analysing the documents submitted by each country and creating a list of problems and innovations under way, proposed lines of action and recommendations which are fundamental for regional action, and prepared a set of steps tending to incorporate appropriate innovations into the Training Systems.

The most commom problems affecting the Institutions for Training Teachers are the following:

- inadequate policies of employment of teachers; lack of relationship between the number of graduates and the absorption capability; inadequate salaries considering the teachers' social reality; lack of coordination between training institutions; lack of linkage between the teachers' training and their work at school, scarce and uncoordinated theoretical and practical guidance regarding school and community reality in marginal areas; lack of specialized trainers; a training that fails to generate a social commitment from the teaching staff; scarce personnel continuous training programs, lack of training in research and scarce preparation to face the challenges of labour reality creatively.

Among the innovating trends, it was stated that presently, in most countries there is a tendency to expand the training centres to their respective communities, to a redefinition of the role of education and to the generation of a greater professional and social commitment on the side of teachers in the quest for a free, fair and solidary society. Special mention was made to:

- homologation of teachers' training at a higher level; a greater curricular flexibility.
- incorporation of non-traditional patterns such as Education for work, Education for Adults, Bilingual and Rural Education, Community Education, Transfer of Appropriate Technologies, Information Science and Computer.
- search for disciplinary diversity within the curriculum.
- new guidelines for teachers' practice relating it to shared research work, pedagogical experimentation, community action and attention to children with learning disabilities.
- increasing use of multiple strategies which include distance education in teachers' training processes.
- expansion of the duties of Training Centres so that they may cover professional training and permanent education of teachers.

The guidelines of Regional Actions proposed include:

- reorganization of Training Institutions so that they may accomplish teaching, research and expansion activities in an integrated manner, with the purpose of improving the quality of education.
- upgrading of teachers' training at the level of higher education.
- performance of diagnoses as a preliminary step in the determination of new actions.
- to streamline the job accomplished by training teachers and their professional career.
- adjustment between supply and demand in order to avoid the use of empirical teachers and professionalization of existing ones.
- design of research programs for Training Institutions.
- re-design of the Training Curriculum in order to enable research and community expansion, encourage the creation of values and compliance with the commitments of the Major Project of Education.
- development of permanent training programs for teacher trainers.
- improvement of institutional evaluation processes, of the services which support teachers' training, the use of educational technology and the exchange of materials and experiences between the various Institutions.
- to give regional support to teachers' training for indigenous education.

The participants committed themselves to carry on with the activities in their respective countries, with a view to jointly define the innovations, incorporating them into their Educational Action Plans.

The valuable material provided by the countries and the achievements of this seminar will make up a publication by PICPEMCE during 1988.

Colombia - Costa Rica:

The experiences initiated towards the end of 1987 in Bogotá, Colombia and San Ramón, Costa Rica are still under way.

The coordinators of the above activities in Bogotá inform that they have accomplished the second stage of this experience (the first one was the initial workshop held in November), called "design and implementation of educational experiences".

In the course of such experience, attempts were made to detect those communicating elements which provided a "reading" on various cultural fields: the marketplace, the park, the bus, etc.

Between March 4th and April 19th, the participants were in the process of giving a preview of their various propositions regarding a critical approach to museums, the results of which will be reported in the coming months.

On the other hand, the Educational Studies Centre (CEE) of Mexico has shown interest in the idea of having a critical approach, and has carried out a brief exploratory survey by means of interviews and observations in the museums located in the city of Mexico, in order to verify the validity of implicit assumptions contained in the **critical approach to the museum** project, proposed by OREALC for the Mexican environment.

Based on the results obtained from the exploratory survey, the CEE is now ready to start its experience within the next months, by carrying out, during the summer vacations of the Northern Hemisphere, an initial Workshop which will count with PICPEMCE's cooperation. Mexico's richness in museums and the attention that the CEE has given to the idea promises very interesting results.

Chile

The meeting planned for the South region of Chile was held on April 18th and 19th, in the city of Valdivia, convoked by the National Focal Institution, the Training, Research and Pedagogical Experimentation Centre.

The subject dealt with at such meeting was "Distance Education". Twelve universities of the region were invited to take part in this event and CPIEP and OREALC technical staff also participated in it.

The participants, after becoming acquainted with the various experiences carried out by the attending institutions, and after being informed of the PICPEMCE Network's operation, agreed, through a declaration, to become part of such Network. Furthermore, they committed themselves to ensure the Network's efficiency, in order to achieve a more efficient coordination of efforts in favour of the quality of education.

The Focal Institution is planning for the next months, to continue with this interesting practice of holding regional meetings of the PICPEMCE. The development of such meetings will be reported in the Major Project's Bulletin.

Venezuela

The educational training institutions which constitute the PICPEMCE at a national level gathered in Caracas, between March 14th and 18th, 1988 under the sponsorship of Universidad Pedagógica Experimental El Libertador, UPEL, the Foundation of Teaching Training Program and OREALC.

This meeting dealt with the topic of Curricular Evaluation and made interesting propositions for further work in this area in relation to the problems involved in the quality of education. Ninety four Venezuelan teachers and technicians attended this meeting.

Uruguay

Thanks to a seminar held within the scope of PICPEMCE in Montevideo, in November, 1986, several innovating projects emerged, the approach of which was fully consistent with the name of the seminar: "Teachers' Training and primary education in a proposal for change". From the twenty one projects presented and analysed on such occasion, there are six which are fully under development, the sole enumeration of which suffices to appreciate their validity as innovating initiatives:

- Bilingualism in boundary areas.
- Implementation of courses involving shared methodologies.
- Environmental education in relation to teachers' training .
- Integrating educational and social action program of initial education.
- Effective use of young people's spare time in an environment of adverse conditions.
- Teachers' training in multicultural areas.

The Magisterial Higher Institute (IMS), which is PICPEMCE's focal institution in Uruguay, will continue providing us with information regarding the development of these interesting projects.

Grenade

Approximately 35 basic school teachers participated in the five-day Workshop held in Grenade in December, 1987 in order to work out an Approach based on Processes for teaching sciences at an elementary level.

After dealing with the topic of teaching at primay-school level and the development of approaches based on processes, the participants analysed the means for adapting and preparing materials, for their application, for the organization of small groups involving children and the incorporation of this process into the teaching-learning process.

The national workshop was carried out as a follow-up of the International Seminar sponsored by UNESCO, which was held in Barbados in 1987 and is part of a global program aimed at stimulating the teaching of sciences which is at present being developed in the Anglophone Caribbean.

REGIONAL NETWORK FOR THE TRAINING OF PERSONNEL AND SPECIFIC GROUPS IN LITERACY AND ADULT EDUCATION PROGRAMMES -REDALF-

Regional Research on Post-Literacy in Relation to Productive Work

The above regional research project, initiated in April, 1986 and successfully ended in March, 1988 intended to give an answer to the need set forth by REDALF member institutions to relate post-literacy activities with the world of production and work. Such project was organized and sponsored by OREALC in the framework of the UNESCO/Government of Spain cooperation agreement and gathered the experience of a significant number of programs existing in thirteen Latin American countries (Bolivia, Brazil, Colombia, Costa Rica, Chile, Ecuador, Guatemala, Honduras, Mexico, Nicaragua, Peru, Uruguay and Venezuela) which, in one way or another, have linked educational activities with productive activities or training for work among young and adult populations (rurals and urbans) who have a low level of literacy.

The research work comprised a descriptive design; on the basis of standardized instruments, information was provided with regard to seventy six programs of the region related to "education and work" and a mainly qualitative methodology of data analysis was used. Furthermore, case studies were conducted in the 13 countries selected. In this manner, macro and micro structural analyses were combined.

Dr. Sylvia Schmelkes, of the Educational Studies Centre of Mexico was responsible for the technical coordination of this regional research.

Among the main conclusions drawn from the study, the following are worth mentioning:

- The properly literate-making contents (reading, writing and mathematics) are scarcely present in the programs studied.

- There is a predominance of programs developed by non-governmental entities, destined for organized popular sectors of urban and rural areas: programs intended to provide training "in" and "for" work and where activities are focussed on labour training rather than on the production of goods and services. Furthermore, a significant number of programs are specialized in providing attention to women and young people. Indigenous populations have been scarcely looked after (5%) and a total lack of programs aimed at migrant populations, agricultural workers, older adults and informal sector of the economy can be appreciated.
- The goals and actions are characterized by their dynamic and changing nature, which makes them capable of adjusting to the users' needs and to the results of evaluations made. The goals did not vary according to the type of population who will benefit, furthermore, there is no explicit mentioning of the goals involving alternative technological development.
- The programs are based on the propositions emerged from the liberalizing education and from the theory of human capital.
- There is consensus, at least in the debates, to link the learning process with the actual putting into practise of what has been taught. However, fundamental differences can be appreciated in the manner in which this integration is defined.
- The definition of the contents is inserted in the declarations as a horizontal process; nevertheless, there is a predominance of formalized educational patterns and the methodology of "narration".
- Important differences can be observed in the manner of understanding the relationship existing between education and production, between "those who educate to produce" and "those who educate producing".
- The programs confirm that they are having an impact on all living levels of the beneficiaries and on their family incomes, but not on employment. Furthermore, the programs have a high terminal efficiency, since most of the people finish the courses.

Several conclusions and recommendations were drawn from the working sessions, among which, the following can be mentioned:

- To deepen the relationship between theory and practice and between education and production.
- To reappraise the value of supremacy of reading and writing skills and calculus as essential tools aimed at maximizing the participants' autonomous development of their productive abilities.
- To train teachers before and during the accomplishment of their duties, and carry out an inventory and evaluation of the supporting materials.
- To systematize the methodologies used, since therein lies the greatest potentiality of the programs.
- To propose strategies for alternative technological development, regional or sector development, of popular production districts, marketing and consumption

During the second semester of 1988, a book will be published, which will be jointly issued by OREALC and CREFAL, wherein the most relevant contributions made to the research project will be presented.

REDALF Workshop for Research Design on Basic Education for Adults

(Santiago, Chile - January 11th to 13th, 1988)

The Workshop formed part of a process of reflection and search for alternatives regarding basic education for adults which was initiated within the frame of REDALF. Along these lines, the work started at the Regional Seminar-Workshop "Alternatives in relation to Basic Education for Adults" (Colonia Tovar, Venezuela, September 29th - October 3rd, 1986) is still under way, and in which, innovating experiences within the area were presented and based on them, an analysis of basic education for adults was made and possible solutions were worked out. In the same way, the Santiago Workshop is the continuation of the work done in the "Regional consultation Workshop on forming, training and perfecting of teachers from basic education centres for adults". The Colonia Tovar diagnosis was reconsidered on this occasion and an analysis was made of specific aspects linked with the forming, training and perfecting of teachers of basic education for adults.

The Santiago Workshop focussed on the analysis and redrafting of a proposition involving a regional research project concerning basic education for adults. Eleven specialists took part in it as well as seven researchers and professionals of the region (Colombia, Uruguay, Brazil, Chile), two CREFAL and OEI representatives and two UNESCO/OREALC specialists.

The research Project intends to study a sample of basic education centres for adults which constitute an offering from the government, as well as non-governmental experiences linked or related in terms of educational purposes intended to benefit the public sector. The study is conceived as a modular system wherein two historical instances are differentiated (1960-1987 and the present situation) and two levels of analysis (macro-and micro-structural). In the macro-structural analysis, documentary and course research are combined with a poll and in the micro-structural analysis, some case studies which will adopt an ethnographic approach.

On the other hand, the research work propounded within the scope of international cooperation is linked with the accomplishment of activities planned for the celebration of the International Year of Literacy in 1990.

In order to develop regional research activities, a joint cooperation between OREALC, CREFAL and OEI has been envisaged.

Regional Technical Preparatory Consultation of the International Year of Literacy.

1990 has been proclaimed by the UN General Assembly as the "International Year of Literacy" (IYL).

Within REDALF's scope, OREALC, in collaboration with CREFAL and the Ministry of Education of Cuba, held in La Habana, between March 22nd and 26th, a Regional Technical Consultation, the purpose of which was: the analysis of the chief context of illiteracy and literacy of children, young people and adults, the knowledge of mandates originated from UNESCO's General Conference with regard to the International Year of Literacy (IYL) and the development of operational strategies for its preparation and implementation in the countries of the region.

Regional specialists and national directors of education for adults were specially called to attend this meeting.

The fact that the above Consultation meeting was held and the results produced therefrom are a positive first step towards determining the futuristic and not merely celebrational nature that the IYL shall have; there was consensus in considering 1990 as a key date to initiate intense regional activities tending towards the fulfilment of the Major Project in Education's goal linked with overcoming illiteracy.

An important number of suggestions were made concerning the following aspects:

- Operational strategies.
- Training, materials and means.
- Educational continuity.
- Systematization, evaluation and research.

The most relevant activity to be carried out right away shall be the publication of the final report (Spanish version) and a summary of the main actions proposed (Spanish and English versions) and their distribution among the Member States, institutions belonging to REDALF and other cooperation agencies, as well as among institutions and specialists that are most directly linked with or interested in actively participating in the preparation, implementation and dissemination of results obtained from the IYL.

OTHER OREALC ACTIVITIES

SUPPORTS RENDERED TO HONDURAS' PLANDEA

Within the scope of UNESCO/PNUD/RLA/88/023 Project, support was rendered to the General Directorate of Education for Adults of the Ministry of Education of Honduras in the preparation of the curriculum for the National Plan for Developing Education for Adults (PLANDEA).

The hiring of national specialists intended to make sure that the curriculum would guide the teaching-learning process concerning the integral basic education for adults and that research work be initiated in order to identify the cultural, vocational and artistic potentialities involved in adult education.

"SUPPORT TO THE DEVELOPMENT OF BASIC EDUCATION IN RURAL AREAS"

Project AGFUND/UNESCO, 522/NIC/10

The Work Plan corresponding to the UNESCO/AGFUND, 522/NIC/10 Project, "Support to the Development of Basic Education in Rural Areas" comprises the period that goes from January to December, 1988. It has been prepared by a national technical team formed by:

- The Directress of General Basic Education (G.B.E.), Secondary and Special.
- Advisor of the Ministerial Office.

- The Directress of G.B.E.'s grades 1st to 6th

The Educational Planning General Director collaborated in the preparation of the above Work Plan, as well as UNESCO's Subregional Education Office for Central America and Panama, who provided technical cooperation.

Within the 1985-1987 period, Project 522/NIC/10 has been a valuable contribution in pedagogical - methodological, scientific-technical, social and educational areas and has guided its activities in the field of documentary and field research on labor guidance (study-work), nuclearization, nutritional food supervision and training at a local level; within the training area intended for national, regional and zonal technicians and inservice teachers, on the basis of the curricular transformation through the methodology of popular education; in the equipping and provision of printing and office materials and tools for studying and working; and, in the production and dissemination of printed materials.

Within the research area, the documentary research works and the support rendered to research undertaken at a regional level, closely linked with the training process, stood out. The investigation of training experiences in primary schools, particularly through the creation and consolidation of training networks, constituted a restatement of the new concept of training in primary schools. Along these lines, the Project enabled to support the internal process of the experiments being held in 24 educational centres and the engagement in research work regarding labour guidance and the systematization of two pilot experiences concerning nutritional food supervision system (Rural Study-Work Schools (ERET).

Within the training area, this Project, in the line of popular education, has made important contributions to the training of technical staff in the use of work methodology for the operation of training networks; to the training intended for in-service technical and teaching staff in the handling of study programs; to the consolidation of concepts and educational nuclearization strategy; and to the exchange of experiences in various projects within the field of production and nutrition.

Within the field of equipping and provision of printing and office materials and instruments to be used for working and studying, it has enabled to support the production of educational materials; likewise, the purchase of a light truck for the Project has been very important in the follow-up and supervision of field activities.

As far as support for producing and printing educational materials is concerned, the Project has allowed materials to be printed thanks to research works, trainings and advisory services. Among the publications issued with the Project's support are documents on methodology, on systematization of experiences and publication of school textbooks (partially financed by the Project).

Bearing in mind the work guidelines fostered by Project 522/NIC/10, surplus resources will be allocated to support the following activities:

- Restructuring of the operation of the Education/Work Rural School (ERET) on the basis of systematization of regional experiences.
- Support rendered to the evaluation and systematization of nuclearization experiences as a means to organize basic educational management.
- Support rendered to the preparation of curricular materials concerning ERET's Modular Technical Units.
- Purchase of printing and office materials.

"SUPPORT RENDERED TO THE STRATEGIC ACTIVITIES INVOLVED IN THE PROGRAM OF EDUCATION FOR ADULTS".

Project FINNIDA/UNESCO 508/NIC/10

Work Plan

This Work Plan corresponding to UNESCO/FINNIDA/508/NIC/10 Project "SUPPORT RENDERED TO THE STRATEGIC ACTIVITIES INVOLVED IN THE PROGRAM OF EDUCATION FOR ADULTS", comprises the period that goes from January to June, 1988. It was prepared by the Project's national technical team and counted with the technical collaboration of UNESCO's Subregional Educational Office for Central America and Panama.

This Work Plan is a document which provides guidance in the allocation of surplus resources of the Project, pointing out at the nature and purposes of the activities to be carried out.

During the 1985-1987 period, the above Project was directed towards supporting the areas of direction and management and training of technicians and popular teachers.

Within the field of direction and management, the most relevant activity carried out with the support of the Project was the formulation of the National Literacy Strategy and Popular Permanent Education. Likewise, the Project supported the work guidelines regarding planning, curricular transformation process and publications of the program.

The general evaluation in relation to this area is that the Project helped to make it more dynamic by providing greater coherence and linkage between the Main Headquarters and the various regions.

Within the field of training of technicians and popular teachers, the Project's most relevant activities were: i) the establishment of the "Georgino Andrade" educational brigade intended to cover the deficit of teachers in the rural area; ii) the "Ricardo Morales Avilés" Workshop and its reproduction as a starting point for a critical reflection and elaboration of a new concept of education for adults; iii) the regional shared research and popular communication workshops which serve as popular education tools to face the challenges posed by the educational transformation; and the development of the project involving night secondary school, as an innovating experience mainly dependent on basic participation. The latter was the most relevant area in the activities in relation to education for adults.

The area of support rendered to labour training for adults was reformulated.

The most relevant activity was the support rendered by the Project to the research work involving 6th Level graduates, which provided with very valuable elements for reformulating the Popular Basic Education Model.

The Project has also been helpful in a basic experience to create an educational model for the cooperative sector (the "Proyecto del Sauce"); advisory services for the decision-making process and staff training in shared research, popular communication, alternative basic education, educational materials and teachers' training; and the support rendered to systematization of the literacy experience in Río San Juan.

In order to follow up some of the guidelines stated in the Project, three strategic activities to support the tasks being accomplished by the Ministry of Education with regard to Popular Basic Education for Adults have been considered:

1. Preparation of a Popular Basic Education design for the rural sector within the scope of the National Action Plan of Literacy and Adult Education.
2. Evaluation of the implementation of a national literacy strategy and Education for Adults, and formulation of the National Action Plan.
3. Support to activities within the field of Popular communication of Adult Education.

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bulletin
THE MAJOR PROJECT IN THE FIELD OF EDUCATION
in the Latin American and Caribbean Region
14

GUIAS PARA EL DESARROLLO DE MATERIALES DE CAPACITACION PARA EDUCACION INICIAL

EDUCACION BASICA Y DESARROLLO RURAL
Estrategias para su integracion

MIRANDO AL FUTURO DEL DESARROLLO HUMANO
en America Latina y El Caribe
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